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ASSOCIATE EDITOR:

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CHARLES DEADY, M. D.

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REPORT OF SIXTY CONSECUTIVE CATARACT OPERATIONS.

BY CHARLES C. BOYLE, M. D., NEW YORK.

THE following are brief histories of sixty consecutive cases of senile cataracts operated upon by me, with a varying degree of success, as the reports will show. The majority of them were operated upon by what is known as the simple method; that is, without the performance of an iridectomy either at the time of the extraction or previously.

My experience leads me to believe this to be the best and safest of the different operations used in the removal of the cataractous lens, and, if we take into consideration the appearance of the eye afterward, the effect is much better than if iridectomy had been performed. The claim made against the simple method is, that there is greater danger of prolapse of the iris into the wound; this I have not found to be the case with the incision that I make. It does not extend up to the periphery of the cornea, but about two-thirds of the distance between the center of the cornea and the upper border. The incision is entirely in the cornea, my knife entering at the corneo-scleral junction two millimeters above the transverse diameter, pushing across the anterior chamber to the opposite side, making the counter puncture at the same point directly opposite.

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The cases in which I have had prolapse of the iris were those in which I carried my incision up to the border of the cornea; by the other method, the most I have had to happen was an adhesion of the pupillary border of the iris to the inner edge of the wound, which does no material harm.

After making my incision, I make a peripheral capsulotomy with the capsulotome; this I prefer to the circular or cross division of the capsule, as by the first you have a sac remaining which incloses whatever cortical substance there may be left behind; while in the two latter, it is allowed to enter the anterior chamber and is liable to cause some irritation.

It is necessary to make a division of the remaining opaque capsule or secondary cataract, so called, as often with one as the other in my experience, although some claim the opposite.

The next step is the expulsion of the opaque lens, which is done by making gentle but steady pressure with the rubber or tortoise-shell spoon on the lower part of the eyeball just below the corneo-scleral junction; at the same time pressure is made upon the upper part of the eyeball by the forefinger of the left hand on the upper lid at its palpebral border, causing the wound to gape, which allows a free exit for the lens. Care must be taken not to touch the edges of the wound with the edge of the lid, as it increases the danger of infection if any active germs should happen to be present.

By these manipulations the lens is gradually tilted upon its axis and slowly expelled through the corneal incision; in some cases the iris is pushed before it, causing a prolapse, which is easily replaced after the remaining cortical substance is removed.

After this the eye is flushed with a solution of boracic acid, the lids gently closed, and a piece of aseptic gauze is applied, after soaking it in a solution of bichloride 1–4000; upon this a small pad of absorbent cotton is so applied as to keep the pressure from being directly on the eyeball.

Both eyes are dressed the same way and a flannel bandage applied. Then the patient is put to bed and kept on the back for at least twenty-four hours, being watched by a nurse to see that orders are obeyed. Only liquid food is given until the wound is healed, when the regular diet is allowed. As a rule I do not remove the bandage to examine the eye until the fourth day, unless symptoms arise indicating some trouble. If, on examining the eye, I find the wound healed and the anterior chamber re-established, a mydriatic is used; either atropine or scopolamine, to dilate the pupil and break up any adhesion of the iris to the capsule that may exist.

If the wound is healed and no inflammation exists the patient is allowed to dress and sit up, still keeping the operated eye bandaged.

Cataract patients as a rule do not do well if kept in bed too long; they become very restless, worry and fret, and often their general health suffers as a result, and consequently the favorable progress of the case is retarded.

In all these cases the usual aseptic precautions were taken. Such patients are given a bath, and the face, hair, and eyes are washed with bichloride 1–4000. Cocaine is used as an anæsthetic in all cases. I may mention that, with the exception of two or three unruly patients, I have not used the speculum to keep the eyelids open, nor have I used the forceps to fix the conjunctiva to steady the eye. I have an assistant hold the upper or lower lid open, according to which eye I am operating, while I hold the opposite lid open with my left thumb and steady the eyeball with my forefinger while making the incision; the patients, as a rule, do not move the eye. I think there is less irritation to the patient and to the eye than when the speculum and the forceps are used.

In this operation there is, I think, less tendency to inflammatory reaction, or loss of vitreous, than there is in those cases where there has been a preliminary iridectomy.

In the majority of cases operated upon, with a few exceptions, there was very little inflammatory reaction afte

the operation, and patients were generally discharged from the hospital at the end of fourteen days. I have found in some cases that the removal of the bandages too soon, for the purpose of inspecting the eye, has a tendency to prevent the wound from healing and to cause an adhesion of the iris to the edge of the wound, especially where a mydriatic is used.

This adhesion of the iris to the inner edge of the wound is due to its not being entirely healed on the inner side, and as the mydriatic dilates the pupil it brings the iris in contact with this raw surface, where it becomes adherent. In many of these cases, for the purpose of securing good vision, it was necessary to perform division of the remaining capsule, or secondary cataract, as it is called; the exceptions to this that I remember were in those cases where there was a loss of vitreous; in these there was always a clear pupil, due to a rupture of the zonula allowing the capsule to roll out of the way.

In the four cases in which the eyes were completely destroyed by a subsequent inflammation, one was due to acute glaucoma, which existed at the time of the operation. Another case I considered due to infection, and the other two I could not account for unless they are due to a low vitality, as the technique of the operation was perfect, and every precaution was taken in all the cases before, during, and after the operation.

It has been claimed that, in making the incision in the part of the cornea indicated, the amount of astigmatism would be greater than with the usual peripheral one. This I have not found to be the case, as my final test for vision showed astigmation in very few cases.

Case I.—Mrs. M., age eighty. Cataract both eyes, February 28, made preliminary iridoctomy. On April 6 operated for extraction of lens, made an upward incision, and after making a peripheral division of capsule, lens was expelled by gentle pressure. Lens was amber color, partially transparent, and hard in consistency; could count fingers at three feet before operation. Operation was performed under proper aseptic measures.

After extraction bandage was applied over both eyes and patient put to bed. Bandage was not removed to inspect eye until fourth day, as the patient had complained of no pain. Lips of the wound were not entirely healed. It took a week longer for the wound to heal. There was no inflammatory reaction in this case. Cornea clear. On May 24 a division of the opaque capsule that remained was performed. Later on ophthalmoscope showed some opacities in vitreous. Vision in this case, although there was an excellent pupil, was only $\frac{20}{70}$ with + 10. D^s. Ophthalmoscope showed atrophy of choroid in the form of annular posterior staphyloma and opacities of vitreous. These conditions existed evidently long before cataract appeared, probably due to a progressive myopia with poor vision.

Case II.—Three years later extracted the lens of the right eye of this same patient by the simple method, making an upward incision without iridectomy. She made an uneventful recovery with a vision of $\frac{20}{100}$ with + 11. D^s. The comparatively small amount of vision was due to the diseased condition of the fundus, as both eyes then had a clear pupil, and the details of fundus were easily seen by the ophthalmoscope ; showing atrophy of the choroid surrounding the optic disk.

Case III.—E. F., age fifty-six. Cataract of both eyes. March 1, made preliminary iridectomy, both eyes. Capsule was ruptured by patient forcibly trying to close the eye at the time of incision, which forced the lens up against the point of the keratome, and as a result a secondary glaucoma followed, due to the swelling of the lens. In the following week was obliged to extract lens of the right eye during the active stage of the glaucoma ; eye was inflamed and painful. Made incision upward, peripheral capsulotomy, and removed the lens. Ice bag immediately applied, usual aseptic precautions taken previous to extraction. Eye bandaged and patient put to bed ; made a good recovery. Very little inflammatory reaction. Vision in this eye with + 11. D^s. = $\frac{20}{30}$.

Case IV.—The other eye was operated on the following week, on account of the glaucomatous inflammation which had followed the preliminary iridectomy, which I was unable to control. This eye was lost, due to suppurative iridocyclitis which followed.

Case V.—October 2. E. H., age sixty-seven, cataract of both eyes. Extraction was performed on right eye under

cocaine, without preliminary iridectomy, making an upward incision ; but in making the incision the iris was wounded, and as a precautionary measure it was deemed advisable to make an iridectomy. Lens was extracted without any difficulty after peripheral capsulotomy was made. No reaction followed the operation and the patient was discharged in two weeks. In two months a division of opaque capsule was made: R. V. = $\frac{20}{30}$ with + 11. D.

Case VI.—In January of following year, the left lens of this patient was extracted after preliminary iridectomy. Made an uneventful recovery. Result of operation : L. V. = $\frac{20}{15}$ with + 11. D^s.

Case VII.—Mrs. Q., age sixty-five ; extracted right lens without iridectomy by upward incision. There was some difficulty in removing the lens and iridocyclitis followed, which was checked by ice application and remedies. The eye was saved with a vision of $\frac{10}{200}$ with + 11. D^s.

Case VIII.—Two months later a preliminary iridectomy was performed on the other eye, and three weeks later I extracted the lens without any trouble. This eye made an uneventful recovery ; had a vision of $\frac{20}{100}$ with + 10. D^s. without a division of a partially opaque capsule, which patient did not return for.

Case IX.—A. Y., age fifty-five ; lens of right eye extracted by upward incision without iridectomy,but as iris was severely bruised during extraction, it was deemed advisable to perform iridectomy at the same time. Lids closed by thin plaster ; no bandage. Patient discharged in two weeks, having had no inflammatory reaction. Later on, examination showed D. V. $\frac{20}{50}$ with + 10. D^s., which was still partially opaque and in the pupillary space.

Case X. ——, age sixty-seven. Extracted lens without preliminary iridectomy. Upward incision. Prolapse of iris in wound, which was replaced after extraction of lens. Made rapid recovery, no pain or inflammation to speak of, discharged in two weeks with a vision of $\frac{20}{40}$ with + 10. D^s. without division of partially opaque capsule.

Case XI.—Mrs. A., age fifty-one. Cataract left eye. Made upward incision. Lens extracted without any trouble. On the fourth day examined eye, found very little redness, pupillary edge of iris adherent to inner edge of wound, no prolapse ; discharged in two weeks with a vision of $\frac{20}{50}$ with + 8. D^s. No

reason but that it should have been $\frac{20}{20}$, as had a clear pupil; probably some irregular astigmation due to traction of iris on cornea.

Case XII.—A. P., age fifty-five. Cataract of left eye. Lens extracted by simple method, no inflammatory reaction to speak of. Discharged in two weeks. Later on made division of partially opaque capsule and had a vision of $\frac{20}{50}$ with + 10. D^s.

Case XIII.—Mr. C. Cataract of right eye. Lens extracted by simple method by upward incision. This case did well, with exception of a slight prolapse of iris in wound. Later on, after division of capsule, had a vision of $\frac{20}{30}$ with + 10. D^s.

Case XIV.—Mrs. M., sixty-six years. Cataract of right eye, which was extracted by usual upward incision without iridectomy. No inflammation followed; bandage was removed on third day and patient allowed out of bed. Very little redness. After division of remaining capsule, vision in that eye was $\frac{20}{20}$ with a + 4. D^s. ⊖ + 1.50$^{cyl.}$ + axis 40°.

Case XV.—Mr. M., age sixty. Extraction of lens of right eye by simple method. Usual upward incision. Lens came out all right, but in using pressure to remove remaining cortical substance had considerable loss of vitreous, which was fluid. In this case had slight swelling and œdema of lids, but under ice application and remedies this subsided in a couple of days, and patient was discharged in three weeks from time of operation. Eye, tested a month after, showed a clear pupil and a vision of $\frac{20}{20}$ with a + 11. D^s.

Case XVI.—Mrs. W., age seventy, had cataract left eye which was extracted by the upward incision; no iridectomy. Found that I had a large black cataract and incision too small: had to extract with scoop; some loss of a fluid vitreous. Eye healed with very little inflammatory reaction or redness. Later examination of eye showed a vision of $\frac{20}{70}$ with a + 10. D^s.

Case XVII.—Mr. S., age sixty. Extracted lens of right eye by usual upward incision: no iridectomy. Allowed out of bed third day as wound was healed. Very slight redness or pain. Pupil dilates easily. Later examination shows a vision of $\frac{20}{40}$ with + 11. D^s.

Cases XVIII. and XIX.—This was a case of a woman who was very difficult to manage. Extracted lens of both eyes, the second one being done two weeks after the first. No trouble with

either eye. Could not tell results as did not return. Patient showed signs dementia before leaving the hospital.

Case XX.—Mr. M., age sixty. Extraction of lens right eye by simple method. No trouble followed. Discharged on tenth day. Later examination showed vision of $\frac{20}{40}$ with + 11. D^{s}.

Case XXI.—Mrs. W. Cataract of left eye; lens extracted without iridectomy. Three days after wound healed. No inflammatory reaction: pupil dilates, no redness. Later test shows vision $\frac{20}{20}$ by + 10 D^{s}.

Case XXII.—Mr. F. Cataract of left eye. Extracted lens, upward incision without iridectomy. Eye did well, wound was healed, when examined on fourth day; pupil dilates moderately, slight pain which soon left, very little redness. Discharged in two weeks. Later on test showed vision $\frac{20}{30}$ with difficulty, with + 10.50 D.^{s}.

Case XXIII.—Mrs. H., aged sixty. Extracted lens of right eye by simple method. Loss of a small quantity of fluid vitreous. Wound healed without any inflammatory reaction. Discharged in two weeks' time; pupil dilates, leaving a clear pupillary space. Later test shows vision of $\frac{20}{40}$ with + 10 D^{s}.

Case XXIV.—Mrs. K., age sixty-nine. Simple extraction of cataract of left eye. Wound healed nicely, but had a slight iritis following, which soon subsided. The following month vision was $\frac{20}{50}$ with + 9.50 D., without division of partially opaque capsule in pupillary space: vision would undoubtedly been $\frac{20}{20}$ if she had had an operation for the secondary cataract.

Case XXV.—Mr. F. Extracted lens of right eye by simple method without any mishaps: two days after wound was healed and pupil dilated under atropine. No inflammation. This patient did not return to have vision tested later on, but it undoubtedly was good.

Case XXVI.—Mrs. B., age forty. Mature cataract of both eyes. Operated on right eye; no iridectomy; no inflammatory reaction and patient discharged two weeks later. After division of capsule he had a vision of $\frac{20}{10}$ with + 12. D^{s}. $\bigcirc$ + 0.75$^{cyl.}$ axis 180°.

Case XXVII.—August, Mr. F. Cataract of both eyes. Extracted that of right by simple method. No inflammatory reaction to speak of. Pupil clear. Said she could see good; was not tested.

CASE XXVIII.—Same patient as above, returned three months later for operation of other eye; no trouble except slight iritis, causing a few adhesions which gave away under use of scopolamine. Did not return to have vision tested, because before operation she was very near-sighted and probably had good sight without the use of glass.

CASE XXIX.—Mrs. R., age sixty-five. Extracted lens of left eye by simple method; very slight redness, soon disappeared. Vision $\frac{20}{70}$ with + 11. D^s. without division of capsule, which will be necessary for better vision.

CASE XXX.—J. M., age fifty-five. Extracted lens of right eye. Simple method. That night got out of bed and inflammation followed, which rapidly developed into panophthalmitis. The loss of this eye I laid to the patient's general condition. Every aseptic precaution was taken before, during, and after the operation.

CASE XXXI.—Mr. B., age forty-one. Extracted lens of right eye. Simple method, no inflammatory reaction. Slight adhesion of middle of iris to inner side of wound, but pupillary border free. Vision $\frac{20}{50}$ with + 11^s.

CASE XXXII.—M. C., age sixty-five. Simple extraction. Up in four days. Pupil dilates well. Later test shows vision $\frac{20}{200}$ + 2. D^s. + 2.50 D. $^{cyl.}$ axis 180° = $\frac{20}{50}$.

This patient I had known before cataract and his vision was never more than $\frac{20}{50}$; he had a high degree of myopia before cataract appeared.

CASE XXXIII.—Mrs. —— age sixty. Simple extraction, wound obstinate in closing, anterior surface of iris adherent to inner edge of wound; no prolapse, some adhesions of iris to capsule which were broken up by scopalamine after division of capsule. Vision $\frac{20}{200}$ + 12 D^s. = $\frac{20}{20}$.

CASE XXXIV.—Mr. S., age sixty. Simple extraction; loss of some vitreous which was fluid, wound healed without any trouble, pupil dilates. Vision $\frac{20}{200}$, without division of remaining capsule.

CASE XXXV.—Mrs. R., age sixty-six. Extracted left lens by simple method. Wound healed without any inflammation. Slight adhesion of anterior surface of iris to inner edge of wound. No prolapse. Doing well and with a good pupil, but one week after the operation she was found dead in bed without any apparent cause; had a weak heart.

Case XXXVI.—Mrs. B., age sixty-three. Lens of left eye extracted. Had had an iridectomy performed five years before for glaucoma. Some loss of fluid vitreous. Made good recovery, although wound was slow in healing. Vision $\frac{20}{100}$ with + 11. D.

Case XXXVII.—Mrs. H., aged sixty. Extracted lens by simple method. Had slight redness. Edge of iris caught in edge of wound. Good pupil. Could not test vision.

Case XXXVIII.—Mr. C., aged sixty-five. Extracted lens of left eye by simple method, no inflammatory reaction. Pupil fully dilated. At the end of two weeks had pleuro-pneumonia, from which he recovered rapidly. Vision $\frac{20}{200}$ + 5D. = $\frac{20}{70}$. This patient had complete detachment of retina in this eye fifteen years before, of which I cured him, and at that time had only a vision $\frac{20}{50}$.

Case XXXIX.—J. N., aged forty-five. Had cataract of left eye, which was extracted by simple method. Wound healed nicely, without any inflammation to speak of. Pupil dilates fully under a mydriatic. Did not have an opportunity to test vision before he left hospital. No reason but that it should have been good.

Case XL.—This was a middle-aged woman (thirty-five years) who had a traumatic cataract ; has some slight adhesion of iris. Extraction made by simple method : lens came out easily ; tendency of iris to prolapse ; after replacing it a solution of eserine was put in the eye and it was bandaged. On second day removed bandage to examine eye. No pain, but slight redness. Wound healed, pupil partially dilated. Upper part of pupillary edge of iris was adherent to inner edge of wound. This patient had been highly myopic previously and had some opacities of vitreous. Vision with a + 4. D^s. was $\frac{20}{200}$. Had a good clear pupil after division of capsule.

Case XLI.—Mrs. H., age sixty-five. Extracted left lens, which was cataractous, by simple method. No accident followed : pupil dilates, giving a clear pupillary space although vision was only $\frac{20}{100}$ with + 11. D^s.

Case XLII.—Made the usual incision without iridectomy, but vitreous gushed out as soon as incision was completed. Eyeball collapsed. By pressure on lower part of eyeball by my thumb I expelled the lens without any further complications. Wound healed without any trouble. On examination of eye found iris

fastened to inner edge of wound. No prolapse. Has tolerably clear pupillary space. This case left hospital without vision being tested.

CASE XLIII.—Mrs. M., aged fifty. Extracted lens by simple method. Examined eye second day and found wound healed. Pupil round and dilates with atropine. No pain or redness to speak of. Later on, vision was $\frac{20}{30}$ with + 10.50 D^s.

CASE XLIV.—Mrs. B., age fifty. In this case I carried my incision to periphery of the cornea and as a result had a slight prolapse of the iris, otherwise good result. Left hospital without having vision tested. No reason but that it should have been good.

CASE XLV.—German woman—weighing 200 lbs. Cataract both eyes. Extracted lens of left by simple method. Eye did well for forty-eight hours ; without any cause inflammation suddenly set up and eye was lost by panophthalmitis.

CASE XLVI.—This was a case of an old traumatic cataract. Was operated upon by the simple method. Loss of fluid vitreous and collapse of eyeball followed, which is very apt to occur in cataracts due to traumatism. Eyes bandaged and wound healed without any trouble. Vision $\frac{20}{200}$ with + 11 D^s.

CASE XLVII.—Mrs. B., age sixty. Made extraction of lens of left eye without iridectomy. Wound was healed and patient allowed up on the fourth day. Slight inflammatory reaction, with some adhesion of iris to capsule. Discharged at the end of two weeks. Later, after division of capsule, had a vision of $\frac{20}{50}$ with + 7 D^s. Has a perfectly clear pupil.

CASE XLVIII.—Mr. B. Cataract of left eye ; had had a preliminary iridectomy performed before coming to me. Made extraction by upward incision and had more trouble with this case than with any of those performed by the simple method. Capsule became adherent to edge of wound, causing a secondary glaucoma, or it may have set up recurrence of a chronic glaucoma, as there was a very marked glaucomatous cupping of the optic nerve. The glaucomatous symptoms did not entirely cease until I removed the capsule through an opening made at the periphery of the cornea by a keratome. Vision $\frac{20}{100}$ with + 4 D^s.

CASE XLIX.—This was a case of an old woman about seventy years of age. Operated upon by me at Metropolitan Hospital, B. I. Was in a very poor condition physically, but after the lens

was extracted by the simple method the wound healed without any trouble, hardly any perceptible redness.

CASE L.—Same patient as above. The other eye a month later, with the same favorable recovery. Patient left hospital before I was able to test vision.

CASE LI.—Mrs. McK., age sixty-five. Made simple extraction of cataractous lens of left eye. Wound healed quickly, no inflammation to speak of. Slight adhesion of iris to inner angle of wound. Vision $\frac{20}{100}$ with + 11 D^s.

CASE LII.—Same patient as the last case, was operated upon a couple of months later. Made an uneventful recovery with the same amount of vision as had the first eye. Vision $\frac{20}{100}$ with + 11. D^s.

CASE LIII.—Colored woman with cataractous lens both eyes. Extracted that of right, simple method. Some loss of fluid vitreous. Made a good recovery. Opaque capsule blocking up pupil. Would not have secondary operation performed.

CASE LIV.—Same patient as above. Operated other eye same way, which was also followed by loss of fluid vitreous and collapse of eyeball. Wound healed with but little inflammatory reaction. Good pupil. Vision $\frac{20}{200}$.

CASE LV.—Mrs. M., age sixty. Extracted lens of right eye by simple method : had a tremulous lens and I was not surprised to have loss of vitreous, which came out as soon as I made the incision. Expelled lens by making pressure on lower part of eyeball with the thumb on the outside of lower lid. Wound healed with adhesion of pupillary edge of iris in wound. No prolapse. Vision $\frac{20}{100}$ with + 4 D^s.

CASE LVI.—Mrs. C., age sixty. Extracted lens of right eye by simple method. Wound healed without any trouble and had a vision of $\frac{20}{50}$ with + 12. D^s.

CASE LVII.—Same case as above, was operated some time afterward for other eye and by simple method. Did well until the eighth day after operation, when a suppurative irido-cyclitis set up and the eyeball was lost. Could not account for this, as every aseptic precaution was taken at the time of operation, and no accidents occurred during the operation. Was thinking of sending patient home when inflammation set up.

CASE LVIII.—Mr. M., age sixty-two. Cataract of lens of left eye, which was extracted by simple method. Wound healed

quickly. No inflammation. Good pupil, well dilated. Later on divided partially opaque capsule and has a vision of $\frac{20}{40}$ with 10 D^s.

Case LIX.—Mrs. M. This was a case where the cataract of right eye had been removed, but as a result had very poor vision due to a very well marked disseminated choroiditis and some atrophy of optic nerve. Operated on left eye by simple method. Incision carried to periphery of cornea. During extraction of lens there was a prolapse of iris which was replaced, followed by threatening prolapse. Lids closed by thin adhesive plaster. Some swelling of lids, with profuse lachrymation, appeared the next day. Relieved by remedies and application of ice bag. Removed bandage third day; some œdema of conjunctiva, which gradually subsided. Examination of eye showed that iris had prolapsed and healed in inner and upper corner of wound. Slight increase of tension, which subsided under solution of eserine. Recovered with a good clear pupillary space, but had a vision of about $\frac{5}{200}$. This poor vision due to same diseased condition of fundus as found in other eye.

Case LX.—Age seventy-five. Cataracts of both eyes. Operated upon the left eye by the simple method. Lens came out without any difficulty, pushing the iris before it ; causing a slight prolapse, which was replaced after remaining cortical substance was removed. Eyes bandaged and patient put to bed. On fourth day eyes were inspected and the wound was found to be healed without any inflammation or pain to speak of. Pupil partially occluded by remaining opaque capsule. Sent home on the fourteenth day. Later test shows vision to be $\frac{20}{50}$ with + 10 D^s. Pupil still partially occluded by remaining capsule.

According to Dr. Knapp, vision from $\frac{20}{200}$ to $\frac{20}{20}$ is considered good results, in cataract operations; $\frac{18}{200}$ to $\frac{1}{200}$ as moderate results; mere perception of light as failures.

Statistics show, in all cases as they occur, failures 5 per cent.; moderate results, 10 per cent.; good results, 85 per cent.

In my cases there are four failures, three moderate results, and forty-two good results.

The eleven cases having no records, without doubt

TABLE OF THE RESULTS OF THE EXTRACTION OF SIXTY CATARACTS.

No.	Sex.	Operation.	Accidents.	Secondary Operation.	Result.
1	F.	Liebreich upward Iridectomy,	None	Yes	V. = $\frac{20}{70}$ with + 10^{D}
2	F.	Simple method,	None	Yes	V. = $\frac{20}{100}$ with + 11^{D}
3	F.	Extraction with Iridectomy,	Capsule ruptured, Glaucoma	Yes	V. = $\frac{20}{30}$ with + 11^{D}
4	F.	Liebreich upward Iridectomy,	Capsule ruptured, Glaucoma	——	Eye lost by Suppuration
5	F.	Simple method,	None	Yes	V. = $\frac{20}{30}$ with + 11^{D}
6	F.	Liebreich upward,	None	Yes	V. = $\frac{20}{15}$ with + 11^{D}
7	F.	Simple method,	Iridocyclitis	No, but necessary	V. = $\frac{10}{200}$ with + 11^{D}
8	F.	Liebreich upward Iridectomy,	None	No, but necessary	V. = $\frac{20}{100}$ with + 10^{D}
9	M.	Liebreich upward Iridectomy,	None	No, but necessary	V. = $\frac{20}{50}$ with + 10$_{D}$
10	F.	Simple method, Iridectomy,	None	No, but necessary	V. = $\frac{20}{40}$ with + 8^{D}
11	F.	Simple method,	None	No, but necessary	V. = $\frac{20}{50}$ with + 10^{D}
12	M.	Simple method,	None	Yes	V. = $\frac{20}{50}$ with + 10^{D}
13	M.	Simple method,	Slight Prolapse of Iris	Yes	V. = $\frac{20}{30}$ with + 10^{D}
14	F.	Simple method,	None	Yes	V. = $\frac{20}{20}$ with + 4^{D} = 1.50 axis 40°
15	M.	Simple method,	Loss of Vitreous	No, not necessary	V. = $\frac{20}{20}$ with + 11^{D}
16	F.	Simple method,	Loss of Vitreous	No, but necessary	V. = $\frac{20}{70}$ with + 10^{D}
17	M.	Simple method,	None	Yes	V. = $\frac{20}{40}$ with + 11^{D}
18	M.	Simple method,	None	No, but necessary	No record
19	M.	Simple method,	None	No, but necessary	No record
20	M.	Simple method,	None	None necessary	V. = $\frac{20}{40}$ with + 11^{D}
21	F.	Simple method,	None	No	V. = $\frac{20}{20}$ with + 10^{D}
22	M.	Simple method,	None	None	V. = $\frac{20}{20}$ with + 10.50^{D}
23	M.	Simple method,	Loss of Vitreous	None	V. = $\frac{20}{40}$ with + 10^{D}
24	F.	Simple method,	None	No, but necessary	V. = $\frac{20}{50}$ with + 9.50^{D}
25	M.	Simple method,	None	None	No record
26	M.	Simple method,	None	Yes	V. = $\frac{20}{10}$ + 12^{D} + c.75 axis 180
27	F.	Simple method,	None	No, not necessary	No record
28	F.	Simple method,	None	No, not necessary	No record
29	F.	Simple method,	None	No, but necessary	V. = $\frac{20}{70}$ with + 11^{D}
30	M.	Simple method,	Loss of Eye by Suppuration		
31	M.	Simple method,	None	Yes	V. = $\frac{20}{50}$ with + 11^{D}
32	M.	Simple method,	None	Yes	V. = $\frac{20}{50}$ with + 2 = + 2.50 + 180

TABLE OF THE RESULTS OF THE EXTRACTION OF SIXTY CATARACTS.

No.	Sex.	Operation.	Accidents.	Secondary Operation.	Result.
33	F.	Simple method, ...	None	Yes	V. = $\frac{20}{20}$ with + 11^{D}
34	M.	Simple method, ...	Loss of Vitreous	No	V. = $\frac{20}{200}$ with + 10^{D}
35	F.	Simple method, ...	None	No	Died from heart disease one week from operation
36	F.	Liebreich's upward. Had Iridectomy 5 yrs. before for Glaucoma	None	No	V. = $\frac{20}{100}$ with + 11^{D}
37	F.	Simple method, ...	None	No	No record
38	M.	Simple method, ...	None	Yes	V. = $\frac{20}{70}$ with + 5^{D}
39	M.	Simple method, ...	None	No, but necessary	No record
40	F.	Simple method, ...	Loss of Vitreous	Yes	V. = $\frac{20}{200}$ with + 4^{D}
41	F.	Simple method, ...	None	None, not necessary	V. = $\frac{20}{100}$ with + 11^{D}
42	M.	Simple method, ...	Loss of Vitreous	None, not necessary	No record
43	F.	Simple method, ...	None	Yes	V. = $\frac{20}{30}$ with + 10.50
44	M.	Simple method (Peripheral Incision)	Prolapse Iris	No	No record
45	F.	Simple method, ...	None at time of operation	No	Eye lost by Suppuration
46	M.	Simple method, ...	Loss of Vitreous	None	V. = $\frac{20}{200}$ with 11^{D}
47	F.	Simple method, ...	None	Yes	V. = $\frac{20}{50}$ with + 7^{D}
48	M.	Liebreich's upward Incision. Iridectomy performed by someone else	Secondary Glaucoma	Yes	V. = $\frac{20}{100}$ with + 7^{D}
49	F.	Simple method, ...	None	No, but necessary	No record
50	F.	Simple method, ...	None	No, but necessary	No record
51	F.	Simple method, ...	None	No, but necessary	V. = $\frac{20}{100}$ with + 11^{D}
52	F.	Simple method, ...	None	No, but necessary	V. = $\frac{20}{100}$ with + 11^{D}
53	F.	Simple method, ...	Loss of Vitreous	No, but necessary	V. = $\frac{5}{200}$
54	F.	Simple method, ...	Loss of Vitreous	No, but necessary	V. = $\frac{20}{200}$ with 11^{D}
55	F.	Simple method, ...	Loss of Vitreous	None, not necessary	V. = $\frac{20}{100}$ with + 4^{D}
56	F.	Simple method, ...	None	None, not necessary	V. = $\frac{20}{50}$ with 12^{D}
57	F.	Simple method.	None at time of operation	No	One week from operation Suppuration. Iridocyclitis set in. Eye lost
58	M.	Simple method, ...	None	Yes	V. = $\frac{20}{40}$ with 10^{D}
59	F.	Simple method, ...	Prolapse of Iris	No	V. = $\frac{5}{200}$ Diseased fundus. Disseminated Choroiditis
60	M.	Simple method, ...	None	Yes	V. = $\frac{20}{50}$ with + 10^{D}

would have come under good results, as none of them were followed by severe inflammation and the operation was perfect. This would make good results in fifty-three cases.

Most of the cases marked "no records" were successful and had every reason to have had good vision, but left hospital before vision was tested and did not return.

Final Test of Vision.	No. Cases.
$\frac{20}{10}$	1
$\frac{20}{15}$	1
$\frac{20}{20}$	4
$\frac{20}{30}$	6
$\frac{20}{40}$	5
$\frac{20}{50}$	8
$\frac{20}{70}$	5
$\frac{20}{100}$	8
$\frac{20}{200}$	4
$\frac{10}{200}$	1
$\frac{5}{200}$	2
No record of Vision,	11
Eyes Lost,	4

THE HYGIENE OF THE EAR.

BY SAYER HASBROUCK, M. D., PROVIDENCE, R. I.

HYGIENE, according to Gould, is "The science that treats of the laws of health in its broadest sense"—hence the liberty we have taken in selecting a title for the subject-matter which we shall present.

This department of medicine has been assigned to sanitary science, and great praise is due its workers for the wonderful results already accomplished. Fresh demonstrations of their forethought in behalf of the welfare of mankind are constantly being brought to our attention. Whenever a new condition arises there always will be someone equal to the emergency and, while giving due credit to the past, it is evident that much more must be expected from the future. It devolves upon all of us to lend a helping hand wherever opportunity presents itself, as it is only by the watchful care of all that the greatest good can be accomplished.

It is to be expected that new ideas, if intended to supersede old ways, will meet with opposition from those who profess satisfaction with the present condition of affairs, usually from the fact that any change will affect their pocket-books. Consideration of this blinds many to the great good that might result to all and illustrates once more the predominate selfish instincts of mankind, leading them to feel that self-interest is to be preferred to mutual welfare even though the experience of ages has shown the fallacy of their position, but when the "shoe pinches" the protestations of this class are usually most unreasonable and difficult to contend with.

In passing, it is well to give credit to the wonderful results that have been accomplished in controlling epidemics of contagious diseases whose wake was strewn with death or impaired physical energy; the latter much more to be dreaded than death itself and a condition that all of us, I am sure, hope and pray may not be ours, realizing as we do that it forebodes no good to us, and only care to our friends. All this has been changed in a marvelous way, so that what formerly was the rule is now the exception.

Having credited all this to general medicine, it would at first thought seem sacrilege to call attention to the needs of so-called special departments of medicine. At the same time the tendency of thought at the present day has been toward the subdivision of medicine.

The first and oldest department of this subdivision comprises diseases and abnormal conditions of the eye. It is commendable that sanitary science has fully realized the demands of the times in making necessary suggestions for the proper consideration of this department. The subject has become, as it were, popular literature of the day. These demands have to a great extent been complied with in many localities, but there are still many places where the world would be better off for a clearer understanding of the benefits derived by others. As we have already said, this department of medicine has become a part of the popular literature of the day, and the time is not far distant when due consideration will be given to all its demands—but how is it with the sister department of the special sense of hearing? The suggestions of sanitary science do not seem to have met with the same acceptance as those on the special sense of sight, and the question becomes pertinent as to whose fault it is. We are forced to reply that the blame is to be laid at the door of the family physician, who, perhaps from no fault of his, has been led too easily to drift into the old ways of considering these troubles. The signs of the times, however, look hopeful that the day is not far distant when the same consideration will be shown this department as has already been given to the other.

The organs of hearing, from their peculiar location deep in the side of the head, are susceptible to inflammation and disease without giving ocular demonstration of its existence to the friends of the patient, and the fact is only known by the evidences of pain or defect in the natural hearing power. It is unfortunate that Nature's signboard —*Pain*—is only heeded by efforts to alleviate the attending discomfort of the patient without regard to the cause—treatment that usually receives the immediate thanks of the patient, but future condemnation when he is forced by the sequence of events to realize the lack of forethought that prompted its administration. The experience of years has shown us that it is always best to consider cause and not effect in selecting our methods of treatment, and in no department of medicine has this axiom been so grossly neglected as in the treatment of ear diseases, even though the dire effects of the past methods stare us in the face on all sides. We should at all times consider the personal comfort of our patients, but at the same time we should be ever mindful of the ultimate result of the methods of treatment we consider best to adopt.

In the light of past results it is safe to say that the treatment of aural diseases should not be attempted except by those who are able to make an intelligent diagnosis of the existing conditions by all modern methods at their command. Diseases of the eye make themselves so self-evident that even the laity cannot fail to recognize their gravity, but diseases of the ear are so masked that only the expert is competent to pass upon their gravity. Being thus, it would seem that these cases should more frequently receive the attention of the specialist, but the experience of the past would not indicate that such had been the case. An examination of the record books of any ear specialist cannot fail to show that the great majority of aural cases have already passed the curable stage previous to consultation with him. This state of affairs is greatly to be regretted, as aural diseases in their acute stages are suspectible of cure the same as any other disease to which flesh is heir. The

specialist is forced, however, to make the record that treatment may help and possibly retard the progressive effects of the diseased conditions—a mere apology, as it were, for his efforts in behalf of the patient and one that is accepted with slight grace, and which usually results in the patient's going from one to another physician, ever hoping that help is somewhere to be found. This frame of mind usually results also in the patient's eventually becoming the dupe of the unprincipled charlatan whose only desire is personal gain, never once realizing that, if confidence was placed in a reputable member of the profession, his efforts would be directed toward their good if not to the accomplishment of their cure. It would seem as though the experience of ages counted as naught, but we cannot but feel that the present enlightenment of the masses will result in ultimate good. The old theories that a pain in the ear needs only the "core of a hot onion and soothing drops" for its cure, or that ears will get well of themselves, or hearing get worse if treated, or that it is better to allow the discharge in children's ears to continue as it will disappear as the child grows older, or that the trouble is slight, as it is "only an ear," and if anything is done it will "go to the brain and make the child an idiot" —these theories are not of the present day. Thank Providence that the time when discharges from running ears were stopped by sealing the meatus with plaster of Paris, has gone by, and that when, if ear trouble is threatened, or has already appeared, scientific treatment is recognized as necessary, and that it should be continued until the ear is entirely well, also that acute diseases may be easily cured and chronic conditions alleviated.

The leaders in medical thought and the teachers of future members of our profession having adopted these tenets, a great step forward has been taken. The time is not far distant, it is to be hoped, when due consideration will be given to the premonitory symptoms of ear trouble, and with the great advance that has been made in treatment in the past decade that the functions of this useful organ will be pre-

served to perform its work to the satisfaction of its possessor.

My writing has just been interrupted by a case, compelling me to drive five miles into the country after dark over roads almost impassable on account of the snow-drifts, at times forcing me to take to the fields to make headway. The patient was apparently dying from meningitis, superinduced by a neglected purulent otitis media of long standing and aggravated by an acute attack of the old trouble, which had evidently involved the petrous bone, as there was no evidence of mastoid disease. The patient had but recently given birth to her first child, a healthy baby that was contentedly nursing its bottle in an adjoining crib, unmindful of its future without a mother's care. It is impossible to imagine a sadder picture, or one which would illustrate more forcibly the points I have been trying to bring out, than this mother dying in the very prime of life with her first-born almost in her arms, and from a disease that, it is safe to say, could have been obviated if proper treatment had been given to the exciting cause years ago when it first attacked her. Cases like this have been much too frequent in the past, but it is to be hoped that they will be less so as the responsibility attending a so-called running ear is recognized.

In the further consideration of the subject we will quote quite fully from a concise article recently published in the September number of *Public Health*, which many of you may have seen. It is written by Dr. C. W. Hoopes, chief of the department of diseases of the ear and instructor in otology at Jefferson Medical College Hospital in Philadelphia:

The organ of hearing consists of the external, middle, and internal ears. The external ear comprises the auricle and the external auditory canal. The auricle is the prominent external visible portion; it is composed of a layer of cartilage, palmlike in shape and arranged in irregular folds, which enables it to collect vibrations of sound coming from all directions. The external auditory canal, which then transmits the vibrations to the

membrana typmpani (drum-head), is about one and one-quarter inches in length ; it is lined by a reflection of the general integument (skin) in which, at its outer extremity, are lodged the ceruminous glands ; their secretions form a ring of wax around the canal, preventing to a great extent the ingress of particles of dust and insects which fly in the air.

The middle ear, or tympanum, is narrow from side to side. It is separated from the auditory canal by the membrana tympani, a delicate translucent membrane consisting of three layers, the outer being a continuation of the skin lining the external auditory canal, the middle composed of fibrous tissue, the internal of mucous membrane. The membrana tympani is capable of being made tense and lax by the action of the tensor tympani and the laxator tympani muscles, so that it may vibrate in unison with the waves of sound in the external auditory canal. After being received by the membrana tympani, the vibrations are transmitted across the middle ear to the internal ear by a column of air in the middle ear and by a chain of bones. The malleus, so-called owing to its resemblance to a hammer, is outermost with its handle resting between the inner and middle layers of the membrana tympani ; its head articulates with the incus, which in turn articulates with the stapes, the base of the latter being applied to the edges of the oval opening of the internal ear. The middle ear communicates posteriorly with the mastoid cells, and anteriorly with the back part of the nose by the eustachian tube, which is about one and one-half inches in length ; it serves as a drainage canal, and permits the entrance of air into the tympanum to equalize the pressure from without.

The internal ear, frequently called the labyrinth owing to the complexity of its shape, is the essential part of the organ of hearing. It is formed by a series of hollow cavities in the temporal bone called the osseous labyrinth, within which and corresponding to it in form is the membranous labyrinth ; upon the latter the ramifications of the auditory nerve are distributed. The membranous labyrinth is surrounded by a fluid—the perilymph, and incloses a fluid—the endolymph. The internal ear is divided into three parts, the vestibule, the semicircular canals, and the cochlea.

The vestibule is the common central cavity of communication between the parts of the internal ear. It communicates with the

middle ear by the foramen ovale. On its inner wall are several small holes for the passage of the filaments of the auditory nerve. The membranous labyrinth of the vestibule consists of two small sacs, the utricle and saccule.

The semicircular canals, three in number, open into the vestibule, their membranous portion communicating with the utricle and saccule.

The cochlea lies in front of the vestibule. It is a gradually tapering canal, winding around its axis two and one-half times. Its interior is partly divided by a thin plate of bone into two passages—the scala tympani, which communicates with the tympanum by the foramen rotundum, and the scala vestibuli, which opens into the vestibule. The membranous cochlea is a closed tube, commencing by a blind extremity at the first turn of the osseous cochlea, and ending in a closed extremity at its summit. In it is situated the organ of Corti, which consists of minute rods, estimated to be about 8000 in number, standing in two rows. The auditory nerve (the nerve of hearing), as it enters the internal ear at the bottom of the internal auditory canal, divides into the vestibular branch, it being distributed to the semicircular canals and utricle and the cochlear branch which terminates in the organ of Corti.

Briefly speaking, the internal ear receives the vibrations through the foramens ovale and rotundum, which excite vibrations successively in the perilymph and walls of the membranous labyrinth, the endolymph, and lastly the terminal filaments of the auditory nerve by which they are conveyed to the brain.

HYGIENE OF THE EXTERNAL EAR.

Usages which cause a malformation of the auricle should be avoided. Among these may be mentioned headgear for children with bands encircling the ears, causing them to grow inward ; hat rims and veils pressing the auricle outward, causing an undue prominence. The positions of the auricle just mentioned may also be hereditary. To correct them and deformities produced by wearing heavy earrings, it is frequently necessary to resort to operative procedures. Boxing the ears as punishment of children, or playfully pulling the ears, is frequently productive of serious consequences. For the removal of foreign bodies which have accidentally found their way into the auditory canal, it is

often advisable to consult an aurist, as efforts of the unskilled will result in pressing the body further inward and causing inflammatory complications. Plugs of wax in the auditory canal, due to the retention of the products of the ceruminous glands, should be softened by an oily solution and removed by gently syringing with warm water. The introduction into the auditory canal of such articles as hair-pins, sticks, and the like, to relieve itching, is liable to produce an inflammation of the canal. This symptom, if persistent, indicates the existence of a skin disease which should have appropriate treatment. Covering the auricle when exposed during cold weather is a wise precaution ; if frozen, normal heat should be gradually established by covering with the palm of the hand, as a sudden change is liable to produce an inflammation of the cartilage.

HYGIENE OF THE MIDDLE EAR.

When we consider the intimate relation which exists between the middle ear and the nose and the throat, owing to their communication through the eustachian tube, it is very clear that any diseased condition may quickly extend through this canal ; therefore, the treatment of catarrhal conditions of the nose and throat should not be neglected, their extension into the middle ear causing a thickening of the membrana tympani, and adhesions are undoubtedly the most frequent cause of deafness in the adult. Adenoid tissue in the naso-pharynx, impinging on the openings of the eustachian tubes, is a frequent cause of deafness, especially in childhood. This condition is indicated by mouth-breathing, mental dullness, and gradually increasing deafness, and calls for the thorough removal of the offending mass. Careless employment of the nasal douche leads to the solution used entering the middle ear, occasionally causing a sudden inflammation. The entrance into the nose of sea water while surf-bathing may cause the trouble just mentioned in the same manner and should be guarded against.

(We are here led to say that the proper use of the nasal douche is a most useful aid to the hygiene of the ear. To our mind, the only proper douche to use is the one founded on the principles of the now well-known Bermingham douche, by which the atmospheric pressure can easily be controlled by the finger over the opening on the upper surface of the douche, and

if due care is exercised in not forcibly blowing the nose just after its application, all dire results will be obviated and a most satisfactory method of cleansing the nasal cavity will be obtained.)

Owing to its very marked influence on the internal ear the continued use of quinine in large doses, unless taken under a physician's care, cannot be commended, although the deafness and ringing caused by it usually soon pass off. I have seen a number of chronic cases of nerve deafness which were undoubtedly caused by its habitual use.

In so far as it lies within our power, we should guard against shock of the auditory nerve by sudden loud noises at short range. When timely warned, this may be done by placing the palms of the hands over the external ears. As to target shooters, artillerists, and boilermakers, who by virtue of their occupation are almost constantly exposed to loud reports, a small pledget of cotton, placed in the opening of the external auditory canal, will serve to modify the sounds.

(It may be well to state that if due care is taken to keep the mouth open at the same time an equalization of the atmospheric pressure is produced on both sides of the membrana tympani, so that the result is less liability to injury of this structure.)

In deafness produced by the causes just mentioned chronic obstruction of the eustachian tubes is undoubtedly a strong predisposing factor.

Dr. Hoopes has thus admirably generalized the subject of hygiene of the ear, but a fuller consideration of the matter, I think, will be appreciated, especially where it may be intimately associated with general diseases.

Foreign bodies frequently find an entrance into the external meatus by accident or intention. If by accident, immediate assistance is solicited from the nearest physician, who usually begins to poke and pull with a pair of forceps or a hooked instrument, in hopes that he may find something and succeed in removing it, efforts that frequently result in much more damage than good. If such a case is brought to your attention, you should first of all, by means of reflected light, determine the location of the foreign body and its nature. Having done this your natural in-

genuity should be able to formulate some means for its removal, either by instruments—which are usually only successful in the hands of an expert—or by means of the aural syringe. The latter method is the one that in nearly all cases should be used, and if this is not successful the case should at once be referred to one better skilled, as delay means swelling and inflammation, complications that try the best of skill. Without the use of reflected light no one should attempt to treat any trouble of the ear, and it is necessary for one to be absolutely sure in his conclusions, as there are many instances of imaginary foreign bodies in the ear, and the subjective symptoms make this class of patients most difficult to deal with.

Our attention may be next called to the possibilities of aural complications in acute exanthematous diseases, which are most frequently prevalent in early childhood when the assistance of the patient is little to be depended upon. As the results of aural disease in cases of this kind may be trouble with the ears in the future, it behooves to guard against the onset and, if such complications do arise, to do our best to limit their destructive tendencies.

Scarlet fever, measles, smallpox, whooping cough, mumps, and diphtheria are frequently associated with aural trouble, and while mindful of general conditions, we should not be forgetful of catarrhal complications of the upper air passages, and do what is necessary to correct their evil influence.

Cerebro-spinal meningitis, typhoid, malarial, and other fevers have frequently been the cause of aural disease, either from their catarrhal tendencies or from specific poisoning of the nerve centers which has resulted in incurable deaf-mutism. All acute febrile diseases have been known to result in mastoid diseases, caries of the temporal bone and of the cervical vertebræ, retro-pharyngeal abscess, etc., all consequent upon purulent otitis media. Dangerous complications, such as hemiplegia and facial paralysis, have not been infrequent. Constitutional diseases, such as syphilis (both inherited and acquired), scrofula, gout, and many

others have been known to affect the ear, the only aid for which is the control of the constitutional symptoms.

The intimate relation of the nerve supply of the teeth to that of the ear is frequently demonstrated by pain which can only be relieved by the removal of decayed teeth, or if caused by teeth in the process of eruption by waiting for the completion of nature's methods. Aural symptoms have also been known to follow the use of false teeth, caused by the material used in the construction of the plates, or the fact that they are ill-fitting, which is a source of nerve irritation. Vulcanite plates are more frequently the source of aural irritation than any others, and wherever such irritation exists their use should be substituted by some material whose irritating qualities are less.

Injuries to the ear from bathing are frequent, but can be avoided by wearing unprepared cotton or wool in the external meatus and by taking care not to swallow water while indulging in this pastime.

Diseases like consumption, albuminuria, diabetes, and the like may be sources of aural complications, but the fatal nature of the general disease calls only for such treatment of the attending symptoms as a means of comfort to the patient.

The recognition of the influence of adenoid growths in the naso-pharynx, and their direful influence on the health in general and the ears in particular, was first recognized by Dr. Meyer in 1868. A monument to his fame and skill as a physician, attained principally by this discovery, has been recently unveiled in Copenhagen, his native city, the funds for its erection having been subscribed by a grateful profession the world over. There, perhaps, is no abnormal physical condition of childhood more fruitful of malicious influences upon the physical economy than the hypertrophy of the conglomeration of lymphoid glands in the posterior nasal cavity known as Luscha's tonsil. These attain their greatest size in childhood, and have a tendency to atrophy, and disappear by the time the patient reaches manhood or womanhood, but before this period is reached all the dam

age has been done, and unless early treatment has been instituted for their radical cure by surgical means the future condition of the patient is most pitiful. A hypertrophied state of the pharyngeal tonsils has a more marked effect upon the general health than hypertrophy of the faucial tonsils, but as they are usually coexistent, it is difficult to differentiate between them.

The diagnosis of adenoids is an easy one, and may often be made from the subjective symptoms alone. These symptoms are deafness, mouth breathing,—especially during sleep,—snoring, and restlessness at night. The child will often be dull and stupid and slow to learn. He may present an appearance of malnutrition and anæmia, but this is not always the case, as adenoids will sometimes be found in bright, healthy-looking children. The character of the voice will be similar to that seen in any form of nasal stenosis, but it may also be arrested by the paretic condition of the soft palate. Coming to the objective symptoms, the facial expression in most cases is quite characteristic. The stupid, vacant look, the open mouth, and the depression of the alæ nasi—these symptoms, when seen together, are pathognomonic of adenoids.

Their existence may be further demonstrated by the rhinoscopic mirror or the digital examination, which is most frequently used, especially in young children. This examination is an easy one, and, if done quickly, is not very objectionable to the patient. The finger is introduced behind the velum. We should first feel for the septum, and then sweep the finger over the vault and posterior wall of the pharynx, and the adenoids will be easily recognized from their soft, velvety feeling, and, being very vascular, the examination usually causes a slight hemorrhage. This hemorrhage is a proof positive of adenoid growths, though at times the symptom may not be present on account of the tough, fibrous nature of the growth.

In treating a discharge from the ear, our first effort should be made to establish thorough cleanliness, usually by syringing, to remove the excess of secretion, to be followed

by the use of absorbent cotton on a probe, to dry the ear as thoroughly as possible before attempting the application of any remedial agency. The dry treatment, so frequently in use a few years ago, by means of antiseptic powders, is to be discouraged, except in the hands of an expert, as too often the powder tends to cake and form a dam, restricting the discharge and resulting disastrously. The use of fluid antiseptics, such as bichloride of mercury and pyoktannin, are much more to be commended.

Having discussed the various diseases liable to complicate the organ of hearing, it will be well to consider the methods to be adopted in cases where the results of treatment have not been satisfactory, or neglect has left the patient in a condition for special consideration. The defects of eyesight have in a great measure received popular consideration, but it will be admitted by all that, so far, but slight attention has been given, especially in our public schools, to pupils afflicted with defective hearing. Why this is so is difficult to understand, as the relative number of cases of defective hearing and sight would seem to be about equal. In the construction of our new schoolhouses every attention is being given to light and ventilation. Our teachers seem to realize the importance of good eyesight, and, where defect is apparent in pupils, call the attention of parents to the fact and suggest that the child be taken to an oculist.

On the other hand, the matter of defective hearing receives but slight consideration. Children of this class are usually diffident and sensitive, and rarely call attention to the fact, and possibly do not, in many cases, realize that they do not hear as well as they ought, if the trouble is of long standing. Recognizing this makes our responsibility the greater in care for these cases. The first duty devolves upon the parents, and where this has been neglected the responsibility falls upon the teacher, when the child enters school life, for the recognition of the ear trouble. When noticed, attention should be at once given to its correction, and, when not amenable to cure, special care should be given the location of the child's seat in the classroom, so

that the difficulty under which the child labors may be overcome as far as possible. If due consideration is given this one point reward will come to the teacher, from the fact that she will have fewer dull and stupid pupils to deal with. Even where naturally bright and intelligent, force of circumstances makes this class of pupils appear dull and stupid, and if at all headstrong, the frequent corrections to which they are subjected have a tendency to develop a willful nature which might otherwise be subdued; or, perhaps, to more fully develop the over-sensitive, suspicious nature which seems to predominate in all these cases, and which adds to their unhappy lot in life, and is fruitful of many misunderstandings of the good intentions of their friends, causing much unnecessary discord.

The condition of the hopelessly deaf, and usually dumb, patients has received careful consideration at the hands of our State authorities by the establishment of special schools for instruction. It now devolves upon those in charge of public schools to do their part in behalf of those slightly afflicted, so that they may more easily pursue their work. The time is not far distant when a demand will be made upon our educators to adopt some means for the better instruction of those pupils who do not come under the head of the hopelessly deaf, but still have so great defect of hearing that the attempt to educate them with children having perfect hearing will result in little good to the former individually, and will indirectly work to the disadvantage of the latter. The natural solution of this problem would be the establishment of special schools for the education of these unfortunate pupils.

If we are to be guided by our experience in the past in solving social problems, it would seem as though our first attention should be given to the betterment of the conditions of those members of our body politic physically deficient, as those endowed with all of nature's functions in full, active vigor, are usually competent to look out for themselves. It seems to us essential, if we are to properly organize our educational system so that it will result in

the greatest good to all and accomplish the evident intentions of its originators, that more attention should be given to finding out the natural physical conditions of our pupils previous to their entering upon their educational duties. The result of such an examination would quickly be the means of formulating some definite system adequate to the needs of all, and though at first it might result in much confusion, this would easily adjust itself in the end, and result in much greater good to the masses, at a much less expense to our taxpayers, than the present methods of expansion, which seem like an effort to embody in our public-school curriculum a smattering of all known lore. From time to time the pupils could be examined and the result of their work noted. If found too much, something could be dropped.

There is another point I wish to call attention to—that we open our schools too early in the fall and close them far too late in summer; embracing two of the most heated times of the summer. I wish to say that I believe that much harm is frequently done physically weak and nervous children by confining them too long each day. A few hours, or a half a day, is often all they can stand. All this would come out in the repeated physical examinations, and when the pupil completed his school life he or she would be in the best possible physical and mental condition to take up the future life-work.

MASSAGE IN TREATMENT OF OZÆNA.

BY E. D. BROOKS, M. D., ANN ARBOR, MICH.

THE principles involved in massage are not new even in their application to diseased mucous membrane, since there have been, and still are, enthusiasts even among physicians.

Neither is massage necessary or desirable in the treatment of many forms of acute and chronic nasal catarrh, its sphere of usefulness being limited, theoretically at least, to those cases wherein the Schneiderian membrane and the underlying tissues have undergone a greater or lesser degree of a atrophic degeneration. Wherever it is applicable, the writer wishes to make only this modest claim: that it materially assists the operator in his effort to restore a healthy tone to the parts treated.

Cleanliness being the prime, essential factor in treatment of ozæna, it behooves the operator to employ such methods as will, with the minimum of irritation and injury to the tissues, remove every vestige of the foul, adhesive secretion.

Often had the writer, before the adoption of massage, wearied himself and his patients in the vain effort to cleanse the nose by the use of alkaline and peroxide sprays, and as often had to resort to the cotton-wrapped probe to remove the offending scab or plug from the denuded surface, leaving it sensitive and bleeding; and as often doubted if the result justified the effort.

Since the adoption of massage it is quite as usual for the patient to give expression to a sense of grateful relief, while the writer is enabled to unhesitatingly affirm a satisfactory

gain in the appearance of the parts and prognose an early and favorable outcome.

In a case of nervous coryza of several years' standing, closely resembling hay-fever, but which continued throughout the year, with an attack morning and evening, in which violent sneezing, with copious watery discharge from nose and eyes, and great prostration were present, in which the most delicate touching of the nasal mucous membrane, the inhalation of particles of dust, as in sweeping or traveling the streets when the dust was blowing, or any unusual mental excitement would precipitate a paroxysm, the writer made a new departure, so far as his knowledge of the treatment used by others extends, and performed massage of the sensitive membranes, at first under cocaine anæsthesia, later after simple cleansing by an alkaline spray, as the tissues became more tolerant of manipulation.

The first treatment greatly aggravated the symptoms for several hours, when a period of slight amelioration followed, continuing about twenty-four hours. Subsequent sittings were followed by progressively less severe aggravations and more marked and lasting periods of amelioration, until there were obtained several consecutive days of complete relief from all the distressing symptoms, with a corresponding improvement in the general condition and appearance of the patient.

As the patient had already "suffered many things" at the hands of other physicians, in the way of sprays, douches, tonics, etc., etc., and had persistently grown worse, the writer is of opinion that massage had much to do with the improvement that followed its use, though as she had never had homeopathic treatment, the nux vom. and ars., administered as the symptoms indicated, probably should receive their share of credit. As the case is yet under treatment it is uncertain what the outcome will be, but the gain thus far is very satisfactory to all concerned, and the outlook is favorable for ultimate recovery.

In a case of ozæna of thirty years' duration the stench, which was intolerable, was unchanged by three weeks' daily

spraying and the administration of the remedies that seemed indicated, but in one week of massage the odor was almost entirely removed and did not return when the patient was obliged to go home for a week and had no other treatment than self-administered sprays. Subsequently the membranes were restored to a healthy state and remain so, after discontinuance of treatment of several months.

Other cases so treated have made even more rapid and satisfactory gains, so much so that the writer is becoming much more optimistic regarding the curability of intractable cases of chronic nasal catarrh.

In the application of massage to the nasal passages the following points are worthy of consideration: A uterine applicator bent at the proper angle, provided with an appliance for removing the cotton as it becomes soiled, is a handy and inexpensive instrument for the purpose. First cleanse thoroughly with an alkaline spray, to remove such of the secretions as the patient can blow out; next, under good illumination, introduce the applicator, its distal inch wrapped with absorbent cotton sufficiently thin to permit its introduction, without undue force, into the part requiring treatment; then, with a rapid lateral motion of the hand, pat and press, without rubbing, all the diseased membrane, removing the cotton as often as it becomes coated with mucus and replacing it with clean cotton; continuing as long as any discharge is found, and as much longer as seems necessary to bring about a healthy reaction; follow the massage with a cleansing spray and then apply whatever spray seems indicated as a protective covering to the membrane. The writer has found a three per cent. mentho-eucalyptol spray in albolene, dusted over with aristol power, very helpful and agreeable.

URIC ACID AS A FACTOR IN THE CAUSATION OF CHOROIDITIS.*

BY RANDOLPH BRUNSON, M. D., HOT SPRINGS, ARK.

THE essayist has been impressed with the dearth of written knowledge on this subject, and thinks too little attention has been given it in text-books and medical literature generally. In his experience with this class of patients at Hot Springs he found, several years ago, that in many cases of choroiditis the patient would not respond to the usual antisyphilitic treatment, such as the administration of mercury and the iodides, etc., so concluded that there must be some common pathologic factor other than syphilis to cause this trouble. After many observations he changed his method of treatment, especially in those obscure cases where no well-defined history of syphilis could be found, and as a result his efforts toward a cure were in many cases rewarded by a clearing up of the disease under the influence of the salicylates and hot baths. If we will consider the close anatomic relationship between the choroid and iris, we ought not to be surprised to find that if uric acid will cause a disturbance in the latter, it should have the same effect as the former. On the contrary, we would rather expect trouble more frequently in the choroid than in most any other structure of the body, for the reason that the middle layer of the choroid consists of an exceedingly fine capillary plexus, formed by the short ciliary vessels; about half an inch behind the cornea its meshes become larger, and are continuous with those of the ciliary

*Abstract of paper read before the Western Ophthalmologic and Oto-Laryngologic Association meeting at New Orleans, La.

processes. The capillary net-work of the choroid is the finest and closest in the body. Its total area is at least eight hundred times greater than that of the short posterior ciliaries from which it arises. In consequence of the law, that the velocity of a current in a tube is inversely to its lumen, the velocity of the capillary current must be very many times less than that of the short posterior ciliary arteries. In the profound chronic toxæmias produced by uric acid, the earliest manifestations of the long series of necrobiotic changes are found in the arterioles and capillaries. Here the blood current is slower than elsewhere, and the blood, charged with toxic substances, is in contact with the delicate structures of these minute vessels much longer than in the larger arteries and veins.

Free uric acid in the blood does cause a contraction of the arterioles, and by this interference with interstitial circulation becomes the prime factor in pathologic changes in every tissue and organ in the body. The author quotes Haig as follows:

"If my premises are good and my deductions sound, and if uric acid really influences the circulation to the extent which I have been led to believe that it does, it follows that uric acid really dominates the function, nutrition, and structures of the human body to an extent which has never yet been dreamed of in our philosophy; and in place of affecting the structure of a few comparatively insignificant fibrous tissues in which it is found after death, it may direct the development, life history, and final decay and dissolution of every tissue, from the most important nerve centers, and the most active glands to the matrix of the nails and the structure of the skin and hair."

The essayist says: "that in many cases of this form of choroiditis, we have associated with it typic symptoms of rheumatic iritis also; again, we may have the one without the other complication, and on close observation, we find that if the patient has an explosion of uric acid in other parts of the body, the choroid and iris are comparatively free from this trouble until these symptoms have subsided,

when we have a recurrent attack of choroiditis or iritis, or both at the same time. It frequently happens that no assignable cause can be found for the condition existing in the choroid, until we have examined the urine and find a larger proportion of uric acid to urea than should exist; then under the influence of the salicylates and hot baths, the inflammatory process will subside like magic. The changes in the fundus of the eye may be entirely confined to one eye, or both may be affected, and may be evenly distributed all over the fundus, or confined to a limited area. The bacillary of the overlying retina may become affected also, and hence the term chorio-retinitis is often a more suitable term than simple choroiditis.

Patches of atrophy appear as rounded areas from one quarter to one disk's diameter, or a little larger, bounded by a ring of black pigment; the entire surface within this ring is white or bluish white, and glistening, and shows no trace of choroidal vessels or pigment. The appearance of the fundus between the atrophic spots is usually normal. In other places we find similar patches showing very small splashes on the exposed sclerotic; in other patches again are seen the choroidal vessels unchanged, or with partial or complete obliteration of the blood streams from endarteritis, appearing as white or yellowish-white strands.

The author does not consider it necessary to give the treatment in detail for this class of patients, as any drug which will increase the solubility of uric acid will eliminate the disease through the excretory organs. He cannot, however, refrain from extolling the benefits to be derived from the hot-water treatment as given at Hot Springs, Ark., in conjunction with other remedies, as this will alone bring about a decided improvement without the aid of the salicylates. He closes by admonishing his hearers to carefully examine the urine in these puzzling cases of choroiditis to find the relative proportion or uric acid to urea, and if $\frac{1}{33}$ or thereabouts is not found, it will show that the uric acid is not being properly eliminated, and in all probability is the cause of the existing choroiditis.

NASAL CATARRH IN CHILDREN.

BY HERBERT A. CHURCH, M. D., SYRACUSE, N. Y.

NOTHING gives more trouble to the general practitioner than to know what to do for nasal catarrh in children; and nothing is more unsatisfactory than the treatment generally prescribed for what is commonly termed "catarrh." Many cases are incorrectly diagnosed from the fact that many physicians have not the necessary apparatus for making a complete examination, as few physicians in general practice have the required instruments.

It is with this idea in view that I am calling your attention to this very common symptom, for in nearly every case it is a symptom of some local or constitutional trouble, except sometimes in the acute variety or epidemic form, where it might be considered as a disease in itself.

Nasal catarrh may be classified as acute, chronic, hypertrophic, and atrophic.

Acute catarrhal rhinitis is of frequent occurrence in children and may be due to climatic conditions, local irritants as dust, smoke, etc., or a deviation of the septum, exostosis, or adenoid vegetations which induce a recurrence of these attacks.

Hypertrophic rhinitis is more often found among the better class and well-nourished children, but not of as frequent occurrence as the atropic form in young children, probably due in part to the lack of development of erectile tissue. Hypertrophic rhinitis is the result many times of repeated attacks of acute rhinitis, resulting in a chronic hypertrophy and structural changes in the mucous membrane. The

hypertrophy is not uniform and is more pronounced on the free surfaces, or lower borders of the middle and inferior turbinated bones.

Exostoses and deflections of the septum, or any growth which may impede the circulation, tend to produce this condition of tumefaction and thickening of the mucous membrane.

When long existing, the hypertrophies become organized with an increased blood supply. Often irritants, as snuffs and astringents, aggravate this condition, also dust or any irritant which may enter the nasal passages.

The most prominent symptoms are difficulty in breathing due to the hypertrophies and mucous secretions, which are very tenacious. Often the patient is compelled to breathe entirely through the mouth owing to the occlusions. Frequently frontal headaches occur, due to the closure of the frontal sinuses. Sometimes we will have tinnitus with some deafness. Dropping of mucus in the throat and larynx causes hoarseness, and sometimes produces a croupy condition.

At times in young children, where the breathing space is very narrow, the mucus is not expelled and remains as an irritant. Fortunately, as I have said before, hypertrophic rhinitis is not of very frequent occurrence in young children.

Atrophic rhinitis is sometimes a sequela of hypertrophic rhinitis, although many times it is due to a general atrophic condition of the nose, as in cases of mouth-breathers, when from lack of use the nose is arrested in the development and atrophy of the mucous membrane and underlying structures result. The glands and cells undergo a fatty degeneration, and the mucous membranes secrete a viscid mucus which dries and scabs, which, when removed, leave a cracked and bleeding surface. The odor is very offensive in this advanced stage when the deeper structures are involved.

These conditions are seen in ill-nourished children, especially among the poorer classes. I think in the majority of

cases of atrophic rhinitis we will find associated with it hypertrophy of the pharyngeal tonsil to a greater or less degree. Of all catarrhal conditions in children under the age of puberty, we may safely say that seventy-five per cent. are due to hypertrophy of the pharyngeal tonsil, the remainder are due to some other local cause, as deflection of the septum, spurs, etc., or constitutional derangements, as in cases of scrofulous, syphilitic, or tubercular diathesis.

My object in writing this paper has been to call your attention to certain conditions which are so common they are often overlooked or disregarded, when many times they are the symptoms of a condition which may lead to grave results, as in adenoid cases, where many times the symptoms are simply catarrhal, but are the existing cause of otitis media or mastoiditis. Neither did I intend to give you a lengthy dissertation on the symptoms of rhinitis in all its forms, as they are familiar to you all.

What I wish to emphasize most is that we make a careful diagnosis in each and every case, that we may be more successful in the treatment. If due to adenoids, remove them and use the indicated remedy for the constitutional conditions in which adenoids occur, and do not wait for the remedy to cure the case, for it will not do it. Do not wait for the ear complications which almost always follow the hypertrophy of the pharyngeal tonsil. If due to local causes as deflections, spurs, etc., remove the existing cause. If in young children where the mucus is not expelled from a very narrow nose and remains as an irritant, cleanse the nose, perhaps using a normal salt solution or plain albolene, or whatever may be indicated. I do not believe, as a rule, watery solutions are beneficial to the nose, but you may use an oily solution in any case without harm.

Nasal catarrh in children should receive greater attention than it has in the past, and should not be considered as comparatively unimportant, as it is many times an indication of a condition which has far-reaching results.

ON THE VASOMOTOR INNERVATION OF THE LARYNX.*

BY DR. E. HÉDON.

Professor of Physiology to the Faculty of Medicine at Montpellier.

WE know how easily the laryngeal mucous membrane reddens under the influence of various irritants. Congestion of the larynx may even go as far as the production of blood extravasations (hemorrhagic laryngitis). The hyperæmic phenomena are probably due to vasomotor troubles of reflex origin. At least, by analogy with what we know of the vasomotor innervation of other organs, it is legitimate to attribute to vasodilator action the laryngeal congestions which appear in certain cases; for example, the hyperæmia which follows in the wake of prolonged vocal efforts (as is often the case with singers, orators, etc.), and which is evidently a functional hyperæmia, just as it is with that of the submaxillary gland at the moment of secretion. On the other hand, clinical observation teaches us that congestion of the larynx can have a very remote origin, namely, in the generative apparatus.

The connections of "sympathy" which bind the larynx to the genital organs are well known. Not only does laryngeal congestion show itself temporarily at the time the voice breaks, and, in certain women, during the menstrual period, sometimes also following sexual excitement, but it even appears as a chronic condition in consequence of cer-

* *La Voix*, No. 102; *London Journal Laryngology, Rhinology and Otology*, December, 1898. Translated by Macleod Yearsley, F. R. C. S., Assistant Surgeon to the Royal Ear Hospital, etc.

tain diseases of the generative organs (various uterine affections, displacements, ulcerations of the cervix), and this proves that there undoubtedly exists, in the latter cases, a connection between the two classes of affections, since it is sufficient to treat the uterine trouble to get rid of the laryngeal congestion at the same time. No one can doubt that in these cases reflex circulatory troubles are at work, because physiology has shown that we can initiate, by the excitation of certain sensory nerves, reflex vasomotor phenomena in places very remote from the point of irritation. The reflex origin of laryngeal hyperæmia in certain affections of the nasal mucosa is no longer doubted.

All these facts imply the existence of vasomotor nerves for the laryngeal vessels, as for the vessels of other organs. Nevertheless, there does not exist any physiological experiment tending to directly prove their existence, and, although there scarcely exists any other organ of the body whose vasomotor nerve supply has not been most carefully investigated, the larynx appears to have been put aside in this connection. At least, after my bibliographical researches, I do not believe that physiologists have occupied themselves in proving if the larynx does possess any special vasomotor nerves; so much the more is the question of the origin and course of these nerves untouched. One only finds in the whole of the literature one work—that of G. Spiess *—which treats of the subject; but, since this author in his tentative experiments has only obtained negative results, one cannot say that he has thrown much light upon the question.

Spiess performed at the Physiological Institute of Leipzig certain experiments on dogs. He endeavored to produce modifications of color in the laryngeal mucous membrane by dividing and exciting the nerves which may be suspected of carrying vasomotor fibers for this organ—that is to say, the great cervical sympathetic and the two largyngeal nerves (superior and recurrent).

* G. Spiess: Ueber den Blutstrau in der Schleinehaut des Kehlkopfes und des Kechldec.—*Arch. f. Physiol. de Dubois-Reymond*, p. 503, 1894.

After what we know of the results of section of the sympathetic cord in the neck there is evident reason for supposing that the vessels of the larynx would present, after this operation, a paralytic dilatation at the same time as the other vessels of the corresponding half of the head. But the result was nil. For the first half-hour after section of the sympathetic of one side the laryngeal mucous membrane did not present any modification of color; but on taking a fresh observation, a few days later, a general red coloration showed itself—not localized to the side of the divided nerve. If, then, concludes the author, one wishes to attribute this reddening to the section of the nerve, one would have to admit that the peripheral terminations preserve their tone a long time after division, and that they are distributed to both sides of the larynx.

Irritation of the nerve gave no more positive result. Faradic stimulation, weak or strong, to the peripheral end brought about no change of color in the mucosa when the same was previously hyperæmic. "The division and stimulation of the superior and inferior laryngeal nerves threw equally no light upon their connection with the arteries of the mucous membrane. The section and stimulation of the peripheral ends of the two nerves were devoid of consequences. Additionally, as was the case with the sympathetic, a slight redness of the mucosa showed itself the third or fourth day after the section of the superior laryngeal nerve. It also extended to the two sides, and was not localized to the side corresponding to the divided nerve. This condition was not, however, of long duration. It disappeared at the end of two days." After these experiments Spiess considered the question of the vasomotor nerves of the larynx of the dog, and still more so of man, as not settled.

In carrying out on my part a certain number of investigations on the subject, I have been able to convince myself that the negative results of Spiess were partly due to faulty technique. In every case the stimulation of the peripheral end of the superior laryngeal nerve is not, as he affirms,

"devoid of consequence," as it produces a reddening of the laryngeal mucous membrane on the side corresponding to the nerve stimulated, constant and sufficiently distinct for there to be no doubt as to the vasomotor function of the nerve trunk; the same stimulation started simultaneously the secretion of the small mucous glands of the larynx. The superior laryngeal should, therefore, be considered as the vaso-dilator and secretory nerve for the laryngeal mucous membrane.*

To make evident the phenomenon I have just mentioned, one must experiment under certain conditions, as it is by neglecting these that Spiess missed the vasodilator action of the superior laryngeal.

It is necessary to operate on a curarized animal, and with artificial respiration, for, to verify vasomotor actions in all their purity (and the more so when the delicate observation of vascular modifications is in question, as in the present case), it is indispensable to eliminate all muscular contraction of a nature likely to upset the production of the phenomenon. In his experiments, Spiess rendered his animals motionless by placing them under the influence of morphine with atropine, after the method of Dastre. I believe this is the reason he only obtained negative results; for he did not fail from faulty observation (he examined the laryngeal mucous membrane carefully, well illuminated through the buccal opening by means of an Edison lamp fixed on the forehead, and sometimes with a Brücke's lens over the previously opened larynx). The use of morphine is sufficient to explain his non-success; the drug is not at all favorable for the study of vasomotor actions. The same experimenter also ought not to have missed absolutely the secretory phenomenon which appears equally as one of the results of stimulation of the superior laryngeal, for, on the one part, his attention was not even aroused on this point,

* E. Hédon: Sur la présence dans le nerf laryngé supérieur, des fibres vasodilatatrices et sécrétoires pour la muqueuse du larynx. Comptes rendus de l'Académie des Sciences, 27 Juillet, 1896, et *Presse Médicale*, 28th November, 1896, No. 98, p. 645.

and, on the other part, the poisoning of the animal by atropine evidently abolished all excito-secretory action. One cannot ignore the fact that very small doses of atropine suffice to completely suspend the secretory action of the chorda tympani on the submaxillary gland.

Leaving now all critical considerations of Spiess' work, I will briefly explain the method I used in my experiments. The curarized animal was tracheotomized (very low, at the root of the neck, to avoid any effect the tracheal incision might have on the circulation of the laryngeal mucosa), and placed under artificial respiration. The two superior laryngeal nerves were exposed on each side of the larynx, and divided a little above the point where the nerve trunk branches before piercing the thyro-hyoid membrane. In this dissection, that no mechanical obstacles might be caused to the circulation of the larynx, great care was taken not to divide any important vessel, and, above all, any vein, A thread attached to the peripheral end of the nerve allowed of its being lifted for the application of the electrodes. This done, there were two methods to choose from for observing the mucous membrane of the larynx; the larynx might be opened by thyrotomy, or laryngoscopic examination, through the mouth, could be practiced with ease. The incision of the thyroid and cricoid cartilages, done with care and without hemorrhage, allows the mucous membrane of the larynx to be well seen, and with all the requisite clearness, and it is the method by which I was able to convince myself of the existence of the excito-secretory properties of the superior laryngeal; but for ascertaining the vasomotor variations it is absolutely to be rejected. Opening the larynx particularly interferes with the capillary circulation of the mucous membrane, and stimulation of the laryngeal nerve, when the mucous membrane is already hyperæmic from exposure to air, can give no positive result, or only an uncertain one. It is only in some favorable cases that the mucous membrane remains pale despite the contact of external air. One sees it redder in the arytenoid region at the moment when the stimula-

tion is carried by the nerve; yet the phenomenon, little accentuated, might be open to doubt if the examination of the mucous membrane by the lens did not allow of directly verifying the increase in size of the small vessels. This method is, then, insufficient—the more so, since it does not take in the examination of the epiglottis.

The examination of the larynx *viâ* the mouth in the curarized dog is extremely easy. No laryngoscope is required. It is sufficient to separate widely the jaws of the animal, and to hold the tongue drawn well out of the mouth, to see the opening of the larynx as well as, and more conveniently than, with a laryngoscopic mirror. On holding the epiglottis down on the dorsal surface of the tongue, by means of a spatula, the chink of the glottis and the vocal cords appear in their entirety. If the illumination is good (light directed from a small incandescent electric lamp, or reflected from an ordinary lamp by a frontal mirror), the color of the laryngeal mucous membrane and its changes can be easily appreciated.

If, then, while the aperture of the larynx is thus examined, an assistant stimulates the peripheral end of one of the laryngeal nerves with a faradic current of medium intensity, the mucous membrane covering the arytenoid cartilage, and the interarytenoid region, will be noted to redden immediately, particularly on the side corresponding to the stimulation. The difference in color to the opposite side is clearly decided. The mucous membrane of the other parts of the larynx in the glottic region does not change, the vocal cords remain white. As to the epiglottis, if certainly participates in the vasodilatation; if it be allowed to fall back on the orifice of the larynx, the small vessels which run over its lingual surface are distinctly seen to dilate, during the stimulation, on the side stimulated, whilst, at the same time, others not previously seen become visible.

When the stimulus ceases the vessels regain their original caliber, and the experiments can be repeated a certain number of times. By stimulating alternately the right and left

laryngeal nerves the vasodilator phenomenon can be produced at will on one or the other side of the larynx.

This experiment, repeated a certain number of times, leaves me no doubt as to the existence, in the superior laryngeal nerve, of vasodilator fibers for the laryngeal mucous membrane; nevertheless its observation is of so delicate a nature that it is better not to trust exclusively to one's own eyes in admitting its truth. But it appears to me difficult to construct an apparatus sufficiently sensitive to register the changes in volume of the mucous membrane. I have not made any attempt in this direction. I have simply sought to secure all the elements of certainty by making different individuals note the phenomenon, and by working in the following way: I first anticipated the observer by stimulating the right or left nerve, and asking him to tell me if he perceived the reddening of the arytenoid mucous membrane on the stimulated side; on his replying in the affirmative I proceeded to a new test, but this time without alluding to the side which carried the stimulus; in spite of that he had not any hesitation, and was never deceived as to the side implicated; further, I pretended several times to stimulate the nerve by bringing the electrodes close without touching it; in this case the observer vainly sought the appearance of the redness, and was for the moment forced to avow that he did not see any change. I was thus assured that the vasodilatation that I had myself observed really did occur, and was perceptible to everyone not prejudiced.

Thus the superior laryngeal nerve contains vasodilator fibers for the laryngeal mucous membrane, just as the lingual includes those for the submaxillary gland and lingual mucosa, and the superior maxillary for the nasal and buccal mucous membranes.

As the stimulation of these last nerves causes at the same time as the vasodilatation the secretion of the glands, there is every probability that the superior laryngeal possesses also an excito-secretory action. Indeed, it is easy to prove that the stimulation of the peripheral end of the

nerve causes the small mucous glands of the laryngeal mucous membrane to secrete. If the larynx be split by a median incision through the cricoid and thyroid cartilages and the thyro-hyoid membrane, the epiglottis divided longitudinally into two equal parts, and the lips of the incision opened out with hooks, the mucosa of the sides of the larynx can be exposed and examined with a lens. After gently drying the surface the peripheral end of one of the laryngeal nerves is stimulated ; immediately on the posterior surface of the epiglottis—the arytenoid and subglottic mucous membrane—may be seen drops of mucus forming globules at the orifice of the glands and uniting, if the stimulation be prolonged, to form a viscous layer over the whole surface of the side corresponding to the stimulus, whereas, on the opposite side, the mucous membrane remains nearly dry. I have seen this secretion not only in the dog, but also in the sheep.

The vasodilatation and secretion are the product of direct effects, and not reflexes, for the whole of the recurrent sensory path is already interrupted by the section of the two superior laryngeal nerves ; but if, for greater security, the two inferior laryngeal and the vago-sympathetics be divided, no change takes place in the phenomenon.

The secretory action of the superior laryngeal of the mucous glands of the larynx has also been pointed out by P. Kokin* in a paper published in "Pflüger's Archives." I consider that, in strict right, the priority of the investigation belongs to him, since the volume of the "Archives" which contains his work is dated some days previous to my communication to the Academy of Sciences. It is, moreover, with satisfaction that I have proved by reading his paper (of which I naturally took no notice until after the publication of my own researches) that we have reached on both sides the same conclusion. This author found, further, that, in the dog, the superior laryngeal contained secretory fibers for the superior and inferior portions of the trachea. These fibers joined in the larynx with the inferior laryn-

* P. Kokin: Ueber die Secretorische Nervend er Kehlkopf und Luftröhrenschleimdrüsen.—*Archiv. f. die Gese Physiol.*, LXIII., p. 622, 1896.

geal, since they broke up again to throw themselves into the tracheal nerve—a nerve trunk which receives fibers from the inferior laryngeal, or the same directly from the vagus. (In the cat the secretory fibers for the mucous glands of the trachea and inferior parts of the larynx are contained in the inferior laryngeal.) Further, the stimulation of the secretory fibers on one side will cause an increase of glandular activity on the other side. But if Kokin has proved, like myself, the secretory action of the superior laryngeal, he does not appear to have noted its vasodilator properties.

The discovery of this new vasodilator and secretory nerve appears to me to have a certain importance for general physiology, beyond the particular interest which it possesses relative to the special physiology and pathology of the larynx.

The number of vasodilators known is really very limited. The stimulation of any nerve trunk produces a contraction of the vessels, and it is a remarkable exception that certain nerves cause the opposite vascular change. These last are, as is known: (1) The lingual for the submaxillary gland (C. Bernard) and the anterior two-thirds of the tongue (Vulpian), the lingual containing the vasodilator fibers of the chorda-tympani; (2) the glosso-pharyngeal for the mucous membrane at the base of the tongue (Vulpian); (3) the superior maxillary and the buccal branch of the inferior maxillary for the nasal, buccal, gingival, and labial mucous membranes (Jolyer and Laffon), these last vasodilator fibers being contained also in the cervical sympathetic (Dastre and Morat); (4) the erectile nerves for the corpora-cavernosa and glands (Eckardt). These are the only nerves whose direct vasodilator action we know of at present.* It will be necessary, after my researches, to add to this list the superior laryngeal nerve. Following the theory generally accepted now, the nerves in question cause vasodilatation by abolishing the tone exercised over the small vessels by the microscopic ganglia contained in the vascular

* We may add that the presence of vasodilator fibers has been pointed out in the cervical sympathetic for the retina (Poncet, Doyon), and that Franck is inclined to look upon the pneumogastric as a vasodilator nerve for the pancreas.

walls themselves; it is an inhibitory action. But the existence of these intraparietal ganglia has not been proved for the vessels which are subject to vasodilator nerve action; elsewhere it is only hypothetical. It will be interesting to discover whether the vessels of the laryngeal mucous membrane are thus provided.

The superior laryngeal, which is the sensory nerve to the larynx, obviously carries to the nerve centers the sensory impressions which ordinarily happen in the production of laryngeal vasomotor and secretory reflexes; it contains, then, both the centripetal and centrifugal tracts for these reflexes. It is exactly the same with other vasodilator nerves, which are also sensory nerves. Nevertheless, in one experiment, I did not succeed by stimulating the central end of one of the laryngeal nerves, the other being intact, in giving rise to the vasodilator reflex on the opposite side to that stimulated; but this negative result, if confirmed, would only prove that the experimental production of a cross reflex is not possible in this case.

Does the superior laryngeal contain vasoconstrictor fibers, as well as vasodilator fibers? I am inclined to believe so, because it has appeared to me that as the result of simple section of the nerve of one side alone, the arytenoid mucous membrane became a little more vascular on that side than on the other. I can only give this result with every reservation. So, after section of the vago-sympathetic at the middle of the neck, I have observed a slight hyperæmia of the laryngeal mucous membrane on the arytenoid and epiglottis; in stimulating the central end of this nerve trunk, the redness was slightly lessened. On the contrary, ablation of the superior cervical ganglion, section of the recurrent, and stimulation of its peripheral end only gave negative results. It would be premature to base on these experiments, so little decisive of result, a demonstration of the vasoconstrictor fibers for the larynx. I think that further researches are necessary, and I limit myself, as a conclusion to this paper, to affirming the vasodilator and secretory functions of the superior laryngeal for the laryngeal mucous membrane.

DO SPRAYS, LOCAL APPLICATIONS, AND NEBULIZED MEDICAMENTS INTERFERE WITH THE ACTION OF THE HOMEOPATHICALLY INDICATED REMEDY IN DISEASES OF THE UPPER RESPIRATORY TRACT?*

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THE question asked by the title of this paper is one which, in the answering, involves some of the contested points among physicians of our school. A conclusive, convincing answer would do much toward breaking the dividing line between the two branches of homeopathists; namely, those who believe that the patient is cured in the safest, quickest, and most complete way by the unaided influence of the indicated remedy, given preferably in the high attenuations or dilutions; and those who believe, as one physician has expressed it in a recent letter, that in abnormal states of the respiratory tract there are present two similar phases of morbid action, the internal energy and the local condition; these thus needing the action of the local medicament and the internal remedy to perform a cure in the safest, quickest, and most complete way.

We are confronted also by another contended point: are we not antagonizing the action of the internal remedy by using local applications? The first class says we are doing just this: we are mixing symptoms and so making an accurate prescription impossible.

The second faction says: if proper judgment is used in

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the carrying out of local measures the action of the internal remedy is aided; for often the same medicament can be used locally as well as internally, and if this is not the case, the local medicaments can be so carefully selected that if a certain amount of absorption does take place it can in no way antagonize the constitutional remedy.

I do not expect these questions will be answered to your satisfaction by the few words I can offer in this paper. I do, however, expect that the evidence I can bring will carry weight, and that we shall feel a little more certain of our future course in these matters. My reason for being even thus far hopeful is because of the aid given by a number of our oldest and most successful throat and nose specialists. My plan has been to write to a number of prominent men, twenty-two of them, inclosing a list of questions and asking for an answer. The response has been prompt, and in almost every case personal letters of an explanatory character accompanied the answers. The questions asked were as follows:

1. Do you in treating the nose and throat use local measures other than surgical in the shape of douches, atomized or nebulized medicaments, or applications by means of cotton swab?

2. If you do use the above local measures, do you give an internal remedy at the same time, or wait until local measures have accomplished certain results, and then prescribe the indicated remedy, or do you feel that the indicated remedy will not in any case be antagonized?

3. Do you believe that you can obtain the best results by depending upon the internal remedy alone?

To the first question the response was, with a single exception, that local measures were used; that for several reasons it was not thought possible to successfully treat diseased states without the aid of these local applications. One physician, a gentleman whose scientific attainments as shown in his books (one of which is a standard) and in his success as a practitioner, and an authority in his chosen field, believes, as stated in the beginning of this paper, in

the dual diseased condition—the distinctly local one and the internal morbid energy, manifestations of the same morbid process—and, therefore, that the local means is a necessity if the best results are to be accomplished.

Another physician of repute says: "The internal remedy takes time to act, but assisted by proper local measures we obtain quicker results." "Besides," he continues, "what possible object can we have in allowing our patients to wander about with nostrils loaded with pus organisms, when we have at our command such easy methods of disposing of them?"

Another equally well-known physician writes: "The only class of cases which do not need local measures is that of the neurotic type and even this group is benefited by harmless local treatment from the mental impression received."

One of the most concise and satisfactory presentations of the whole subject was given me by a colleague and personal friend. He mentions the several purposes for which local applications are made as follows:

Cleansing applications, if non-irritating, can only be salutary.

Disinfection and those agents which tend to the destruction of morbific germs are surely desirable.

Preparations which influence the circulation of the part, causing increased power of absorbing morbific material, or by stimulating effects bringing to the part an increase of healthy tissue material—these applications are of undoubted value.

Protectives: those substances which can be used in defensive ways, and which serve to protect an inflamed or irritable mucous membrane from cold winds or from dust, must be beneficial.

Powerful astringent medicaments he would condemn most forcibly.

Local medicinal effects: sometimes the internal remedy can also be used locally, acting as a re-enforcement of the first and not in the way of interference. But if a different remedy be used locally, its effect can only be transitory as

compared with that of the steadily administered internal remedy. "Many in our school," he writes, "do not lose caste even by regular alternation of remedies; while the local treatment, at most, can only be regarded as the use of an intercurrent remedy."

The other replies were practically repetitions of the answers just given.

Of the exceptions noted, one physician says: "I am using local applications with constantly lessening frequency. My study of mucous congestion and hypertrophies has made me feel sure that we were not dealing with local disturbances. The causes are failures to eliminate from the body impurities that should be carried off by the liver, kidneys, bowels, and especially, the skin. The endeavor to throw off those impurities finds expression in the linings of the body, notably in the respiratory organs." He further states: "The attempt to control existing defects in the nose and throat by astringent or caustic applications is unscientific and illogical, and necessarily unsatisfactory." To illustrate his points the doctor cites a case of ozæna which received no benefit whatever from local treatment, but was quickly cured by sulphur.

The second question was asked to elicit opinions regarding the possible antagonistic effects of a local remedy against the internal. To this the majority of those replying expressed the belief that the local remedy should be chosen so carefully that it could not so antagonize the internal one; but even if this could not be done the absorption would be very little in the case of oily sprays, vapors, or swab applications, while with the aqueous applications, their use at the proper specific gravity would obviate, to a great extent, osmosis. It was admitted by some that an antidotal effect could occur, but that it was necessarily of short duration and, therefore, would only in rare cases counteract the effect of the indicated remedy for a prolonged period. Four of the correspondents stated that they had never noticed an antidotal effect, and doubted if it ever occurred. Two gentlemen omitted the internal

remedy if, in their judgment, vigorous local measures became a necessity; while one resorted to local measures only on rare occasions.

To question three, no correspondent replied definitely that he could obtain the best results by depending upon the internal remedy alone. The answers here were in every case modified.

In view of the nature of these experiences as showing the apparent necessity for the local measures, it may be stated that the physicians to whom letters were sent were not selected from any knowledge of their therapeutic beliefs, other than that they belonged to our school of medicine. In many instances it was not known whether they belonged to the so-called Hahnemannian faction or not. In fact, it was hoped that some of them did, and that in this way more diverse opinions would be secured. It may be that those who did not reply were of this body and thought the questions hardly worth replies.

There is little more to be added by the writer of this paper; but as the compiler of these very interesting letters, it will not be out of place to give the results of some observations on the subject, more in the way of emphasizing the statements of those who have so kindly given the results of their own experiences. Until a comparatively recent date, local applications as made by the general practitioner have been used entirely in a haphazard way, because an attempt at an accurate diagnosis had not been made before beginning local treatment. The internal remedy can often be prescribed, because the subjective symptoms are sometimes sufficient for the choosing of the proper remedy; not so with the local remedy. How inadequate, not to say harmful, a stimulating local application would be in certain neurotic conditions of the nasal passages; the trouble, the patient will tell you, being attended by discharges having a bad odor, together with other expressed symptoms, similar to those of an atrophic process. Or again, how unsatisfactory it would seem to treat a discharge from the nose having origin in one or more of the accessory sinuses, with

sprays, douches, or other local measures directed to its respiratory portion. These cases are not uncommon, as every physician of experience can testify. Instances similar to the above, in other directions, could be given almost indefinitely. In consequence of this and from the fact of the great efficiency of the homeopathic remedy, local measures have not been given their proper place in our armamentarium, and have naturally fallen into disrepute.

That the proper local medicament does aid nature in performing a cure would seem to be the case even if used alone, if we consider the very large number of those of the dominant school who are using such methods, and who place very small dependence upon other medicinal measures—and yet who do cure their patients. Who can deny it? We also feel confident that the homeopathic remedy has alone, again and again, performed cures where local conditions were prominent and in apparent need of direct treatment.

Does it not seem reasonable that if these two powerful weapons could be directed toward diseased conditions at the same time, intelligently and in such a manner that one would not antagonize the other, working harmoniously, one at the "morbid internal energy," the other by cleansing, soothing, or stimulating (and thus alleviating the local manifestations of the same "morbid internal energy"), that this combined attack would more quickly annihilate our foe disease, than either the methods of our friends of the dominant school or those of our friends of the strictly Hahnemannian school?

We must be quick to discover those reflex conditions of the throat and nose which point unmistakably to disturbances of other organs of the body. And we must not forget, as has been before quoted, that diseased conditions often originate in improper diet, in bad sanitary surroundings, and in imperfect functions of the waste-carriers of the body, and that little can be done by medicine, either internally or otherwise, without attention to diet and hygiene.

It is earnestly hoped that these and kindred subjects will

be discussed by the members of our profession, and that we may, if we use in our practice other than strictly homeopathic methods, do so because of conviction of their efficacy, but at the same time give to homeopathy its right place and its just dues.

ABSTRACTS FROM CURRENT LITERATURE

Escar, M. E.—Report on the Pathology of the Lingual Tonsil.—*Arch. Internat. de Laryng., Otol., Rhinol.*, May, June, July, August, 1898 (trans. by E. B. Wagget).

It is well developed in childhood and atrophies toward adult life. The pathology is similar to that of the palatine and pharyngeal tonsils. The following diseases affect it: 1. Catarrhal tonsillitis. 2. Phlegmonous tonsillitis, (a) suppurative follicular, (b) peritonsillar phlegmon, *i. e.*, suppuration of the fascia forming the floor of the tonsil. 3. Chronic hypertrophy, (a) latent, (b) normal with pharyngeal tenesmus, sensation of a foreign body in throat, etc., (c) obscured, revealed by nervous reflex. 4. Atrophy. 5. Lacunal tonsillitis. 6. Varicosities in the tonsil. 7. Neuroses of the base of the tongue. 8. Syphilis (a) one case of chancre is on record, (b) secondary conditions of hypertrophic character common, (c) gumma not rare. 9. Primary tuberculosis. 10. Lupus and leprosy. 11. Leptothrix mycosis. 12. Benign tumors--fibroma, lipoma, angioma, papilloma, chondroma, and adenoma. 13. Malignant growths—sarcoma, carcinoma. 14. Cysts—glandular and of Bochdalek's canal, and those arising from thyroid tissue. PALMER.

Pini.—The Diagnosis between Tubercular Syphilis of the Tongue and Syphilitic Glossitis.—*Ann. de Dermatologie et de Syphiligraphie*, October, 1898.

Tubercular Lingual Syphilis.—1. Begins in the submucous connective tissue, which corresponds to the *rete mucosum* of the skin. 2. Spreads from the center toward the surface, deforming and atrophying the papillæ. 3. Profoundly disarranges the disposition of the elastic fibers and of the muscular elements, which disappear, leaving no trace. 4. Has clearly defined limits. 5. Has

an origin, a structure, and an anatomical seat which do not differ from cutaneous tubercle. 6. Shows no tendency to the formation of giant cells. 7. Presents vascular alterations consisting of proliferation and detachment of the endothelium and infiltration of the external tunic without evident traces of an endarteritis.

Syphilitic Glossitis.—1. Has point of departure notably deeper and more exactly in the muscular parenchyma. 2. Has no defined limits, and easily invades the entire organ. 3. Presents an exuberance of the mucous epithelium, which sends irregular processes into the corium. 4. Consists in its inflammatory process of the same morphologic elements as tubercular syphilis, with giant cells in addition. 5. Shows evident new formation of connective tissue. 6. Comprises a newly formed connective tissue of intricate disposition, which imparts a considerable resistance to the organ. 7. Produces deformity, *e. g.*, lobulation or fissure of the surface, resulting either from loss of substance by ulceration or from contraction of the newly formed connective tissue (Scheppegrell). PALMER.

Risley.—Sponge Grafting in the Orbit after Enucleation.—*University Medical Magazine*, September, 1898.

The writer gives the following history of a case during the healing process: The eye was dressed as after an ordinary enucleation. The operation was followed by no reaction, pain, or swelling of the lids or tissues in the orbit. There was no discharge, and the conjunctiva covering the sponge presented a uniform red appearance. The sutures were removed on the fifth day. On the eighth day the conjunctival wound had opened, leaving a horizontally oval window into which the sponge mass protruded. There was no pain and no discharge from the conjunctiva, but the surface of the sponge was covered by a homogeneous yellowish-white, tenacious layer, which could be wiped away in stringy masses. The sponge, on pressure exerted through the lids, exuded from its interstices an abundance of a lymph-like exudate. The lids were closed and a protective bandage reapplied. On the tenth day the sponge mass was still more prominent and was bathed in the exudate. The patient was entirely comfortable, and there was no inflammatory reaction. He was then placed upon the operating table, and the most protuberant part of the sponge shaved off with scissors. When

seized with forceps it was found soft and friable, easily breaking down under the grasp of the forceps ; indeed presenting none of the characteristics of the orignal sponge other than its cell-like structure and color, and the cells were found filled with exudate which exuded under pressure. After cutting the surface a slight salmon-colored staining was observed creeping in from the periphery, evidently from several blood vessels which were being projected from the surrounding tissues into the sponge mass. It was everywhere firmly adherent to the surrounding tissues and could not have been removed without complete dissection. Two weeks after insertion the sponge presented a uniform homogeneous surface, yellowish-white, and tongues of granulation masses were seen projecting into its surface from the surrounding conjunctiva. The extra-ocular muscles moved the mass freely in all directions. Three weeks after its insertion the same yellowish-white appearance continues, but the entire mass is smaller, and tongues of abundant granulations are penetrating it from all sides, which bleed freely when punctured. The patient returned to his home at the end of the second week. He has had no discomfort at any time. At last reports the sponge had entirely disappeared, the last remnants, in the shape of granules soft and friable, being wiped away with a cotton brush from a small central pocket. The orbit was well filled with a firm mass of tissue, covered with conjunctiva, which moved with great freedom in all directions, furnishing an excellent base for an artificial eye. The result in this respect was very much better than is usually seen after ordinary enucleation. The length of time, two to three months, required to complete the process of absorption of the sponge and its replacement by connective tissue, as an objection, is offset by the fact that the patient is in no way inconvenienced during the period of conversion. DEADY.

Ellett, E. C.—Holocain in Eye Surgery.—*Phila. Medical Journal*, November 26, 1898.

The above article contains the following concise description of the action of the drug: Holocain is sparingly soluble in cold water, but freely so in hot. I prepare it by agitation with hot water in a porcelain vessel, and pour it when cold into a bottle thoroughly cleansed with liquor potassæ, and then with distilled water. It should not be prepared in glass vessels or stirred with

a glass rod, for the alkali of the glass is dissolved out and precipitates the drug. The standard solution is one per cent strength, and this solution is clear, stable, and antiseptic. Randolph has demonstrated its inhibitive influence on bacterial growths, and pus-organisms are killed when exposed to the solution for a certain length of time (less than 24 hours). It is a protoplasmic poison, arresting amæboid movements, putrefaction, and fermentation. If the solution becomes cloudy, filtering renders it clear, and boiling does not interfere with its activity. As it is itself antiseptic, it is not necessary to add an antiseptic or to sterilize it before using. When dropped into the eye it causes smarting, about like that caused by a five per cent. solution of cocaine. In about one minute sufficient anæsthesia of the surface is produced to permit the removal of a foreign body from the cornea. For operations, repeated instillations are necessary.

The effect of holocain is simply that of producing anæsthesia. It does not affect the pupil or the accommodation. It does not contract the blood vessels, hence it penetrates better, and is more readily absorbed than cocaine. The anæsthesia of deep structures makes it the best anæsthetic for iridectomy, as it permits the iris to be cut with absolutely no pain. It permits freer bleeding than cocaine does. No toxic effects have been observed from dropping it into the eye, but hypodermic injections of the solution are said to cause clonic convulsions. It has no effect on intraocular tension, and there is no tendency to cause desiccation and exfoliation of the corneal epithelium. The anæsthesia lasts about 20 minutes, but may, by repeated instillations, be prolonged indefinitely with perfect safety. Holocain has more effect on inflamed surfaces than cocaine. It may safely be put in the patient's hands for use in painful affections of the cornea.

DEADY.

Enos, Clinton.—Senega for Sneezing.—*The Amer. Hom.* August 15, 1898.

Cured a case with following history, For two years a girl had frequent attacks sneezing each day, some lasting half an hour, a sequela of pertussis, attacks accompanied by sharp pains in chest and temples, always profuse nasal discharge with stuffed, feeling in nose. In two years no return, although has had measles and several attacks of acute rhinitis. PALMER.

Poole, Wm. H.—Clinical Report of Case of Rhinolith.—*Am. Jour. of Surg. and Gyn.*, November, 1898.

A lady, twenty-four years æt., applied for treatment for profuse nasal discharge, tenacious and offensive, nasal obstruction, loss of smell, nasal voice, etc. Examination evidenced hypertrophy of left turbinateds, especially the inferior. The inferior turbinated was removed, accompanied with but slight hemorrhage. The nervous strain of the operation caused a headache, to which patient frequently subject. Headache ended with accustomed retching. The straining with the latter caused severe hemorrhage, for which thorough tamponing was necessary. During the night after the tampons were removed the left naris became suddenly obstructed. Upon examination a loose object found in inferior meatus. A rhinolith, about two inches long and three-fourths inch broad, was removed with gradual relief of all symptoms. PALMER.

Todd, C.—A Form of External Rhinitis due to the Klebs-Loeffler Bacillus Appearing in Children Convalescent from Scarlet Fever.—*London Lancet*, May 28, 1898.

(By external rhinitis is meant inflammation of nasal vestibule.) By observation on fifty-one cases of this frequent sequela of scarlet fever, a thin excoriating anterior nasal discharge causing tumefaction, redness, excoriation of and burning in the upper lip, which is often accompanied by little pustules elsewhere on body, the author finds it to be related to diphtheria because it contains the characteristic bacilli. He tested by injecting the toxin from these cases into guinea pigs, which died the same as from culture from genuine cases of diphtheria. On the other hand, noted that nasal or faucial diphtheria was never contracted in the human being from these cases. Recapitulates as follows: 1. Children convalescing from scarlet fever in hospitals are liable to a certain external rhinitis often accompanied by the formation of secondary pustules in various parts of the body. 2. This rhinitis, though not membranous, is associated with the presence of the Klebs-Loeffler bacillus in the nostrils, the organism being absent from the fauces. 3. It is contagious as such, but has not been observed to give rise to faucial or laryngeal diphtheria. 4. It is unaccompanied by rise of temperature, albuminuria, or marked glandular

enlargement. 5. It appears to be limited to children under thirteen years of age, and has been most frequently observed at the age of three or four years.

Milligan, W.—Some Observations upon Antrectomy as a Means of Treatment in Suppurative Middle-Ear Disease.—*Brit. Med. Jour.*, October 22, 1898.

In an interesting article upon the above subject the author furnishes the following statistical results of operations on 150 cases:

Of the 150 cases 10, or 6⅔ per cent., were acute, and presented the ordinary symptoms of a rapid course : high fever, quick pulse, severe mastoid pain, and the ordinary objective evidences of an acute suppurative middle-ear catarrh. In all, after a short preliminary trial of local treatment—local depletion, enlargement of the existing perforation, etc.—the mastoid antrum was opened and drained, any adjacent mastoid cells which were implicated being freely opened up and cleansed.

The result in all was eminently satisfactory ; rapid healing taking place, with recovery of hearing power.

Of 150 cases, 10, or 6⅔ per cent., were subacute, had lasted for periods varying from two to three months, and were characterized by a copious discharge, progressive loss of hearing power, but by an absence of any degree of local pain, and had been subjected to the ordinary methods of local treatment from an early stage of the disease.

After free opening of the antrum and contiguous mastoid cells, 9 entirely recovered, the hearing power returning to practically the normal amount, and 1 was lost sight of.

Of the 150 cases, 102, or 68 per cent., were genuinely chronic, and had lasted for very varying periods.

In all (except the tuberculous cases and cases with cholesteatomata) persistent and careful local treatment had been tried for periods varying from twenty to twenty-four months, but without avail.

In 78 Stacke's modified mastoid operation was performed with the following results:

In 65 a complete recovery took place, by which I mean that all suppuration completely ceased, and the newly-formed antrotympanic cavity became nicely papered with an epidermal cover-

ing. One died, and 12 were lost sight of or are still under treatment.

In 72 the ordinary Schwartze operation was performed. Of these, 47 recovered, 8 died, and 17 were either lost sight of or are still under treatment.

Of the 150 cases, 18, or 12 per cent., were of tuberculous origin, and were submitted at once to operation. Nine of the cases recovered and 6 died, the cause of death in 3 cases being meningitis, in 1 tuberculous enteritis, and in 2 general marasmus. In 3 cases the subsequent history is unknown.

Of the 150 cases, 10, or 6⅔ per cent., were implicated with the presence of cholesteatomatous masses, and were submitted to early and radical operation. Of these 10 cases, 10 recovered; in 5 a permanent mastoid fistula being established, in 1 the cavity being allowed to granulate from the bottom, while in 4 Stacke's operation was performed.

With regard to the subsequent hearing power of those patients who had been operated on for chronic mastoid disease, I have no very accurate notes. My general impression is, however, that in the majority of cases the hearing power was after operation very much what it was before operation; in a few it was made worse, and in a small number of the cases the hearing power *for conversation* was somewhat improved.

DEADY.

Cheatle, G. L.—A Case of Sarcoma of the Middle Ear.—*Brit. Med. Jour.*, October 22, 1898.

The following case, history of a rare form of disease, is interesting:

A female child, aged 2½ years, was admitted into West London Hospital on May 4, 1896. A large, diffuse, fluctuating, red-hot, and painful swelling occupied a position behind the pinna on the left side; an elliptical, tough pedunculated polypus filled the external auditory meatus. As there was a history of a discharge from the ears for some months past, the whole condition appeared to be the result of an infective inflammation, beginning in the middle ear and spreading from there to surrounding parts. Upon opening the post-aural swelling by making the usual curved incision, this view of the case was not altered, for nothing was observed that could not have been caused by an infective inflammatory

process, namely, pus, granulation tissue, and ulceration of bone; the last was represented by a communication about the size of a threepenny bit between the abscess cavity and the mastoid antrum. Upon inserting a sharp spoon into this sinus, the polypus was forced out of the meatus as if it had been previously separated from its attachments. After enlarging the sinus leading to the antrum and clearing the resulting cavity, it was lightly packed with a strip of cyanide gauze soaked in a mixture of iodoform and 1–2000 solution of perchloride of mercury. I regret to say sections were not made of the polypus. The local conditions were so much improved by this subsequent treatment that the child left the hospital for the seaside on July 16.

Dr. Pardoe, who was house surgeon, saw the case at the hospital again on August 17, and admitted it as an undoubted sarcoma. When I saw the case the child had facial paralysis of the left side, and behind the auricle a sessile, red, offensive, and fungating mass, about the size of a small orange, was pushing it outward and forward. The tumor passed subcutaneously downward into the upper regions of the neck. Optic neuritis was present.

Further operative interference was impossible, as the disease was too extensive, so the parts were kept as pure as possible by careful dressing. The external and visible parts of the tumor grew rapidly, and the child died on October 19.

At the *post-mortem* examination, which was made by myself with the kind permission of Dr. Aldren Turner, the tumor was nearly as big as the child's head, and involved the uppermost of the deep glands of the neck, which pushed outward the overlying structures, in parts actually involving them in the malignant growth. Through an opening in the temporal bone, that involved the mastoid lower squamous regions and the roof of the middle ear, the growth appeared and occupied the middle fossa of the skull as a rounded, lobulated mass about the size of three chestnuts pressed closely together. Over the intracranial surface of the growth the dura mater was lost, the overlying temporo-sphenoidal lobe was much indented, but did not form any part of the malignant growth. The lateral sinus and other structures were normal. A microscopical section of the tumor proved it to be a sarcoma, chiefly consisting of small spindle cells.

DEADY.

Findlayson, D. W.—A Fatal Case of Acute Thyroiditis.—*Am. Jour. Surg. and Gyn.*, October, 1898.

A young lady school-teacher during fall of 1897 suffered from nervousness and palpitation or irregular heart's action. During Christmas holidays she noticed some swelling in the front of neck. Continued regular duties till, on March 9, was attacked with irresistible nausea that culminated in vomiting, which vomiting continued till the 13th. On the 14th, writer found her with all the symptoms of exophthalmic goiter. Heart-beat was tumultuous, weak, rapid, and irregular; pulse from 175 to 200 per minute. Cavernous enlargement of the thyroid. Was nervous, but pressure on gland made her much worse. On 16th, one week from inception, patient died. Therapeutics consisted in heart tonics and rectal alimentation. PALMER.

Meyjes, W. Posthumus.—On the Ætiology of Some Nasal Reflex Neuroses.—*Jour. of Lar., Rhin., and Otol.* December, 1898.

On the septum, just opposite the anterior extremity of the middle turbinated body, is found a triangular-shaped thickened portion of the mucous membrane; "it is soft and compressible," occasionally so highly "developed that the membrane may be moved up and down by a probe,"—this is denominated the *tuberculum septi.* Zuckerkandl considers that the tuberculum septi is formed of an accumulation of glands. It is reducible by cocaine. From extended observation, including both artificial irritation and careful watching cases in which pathological irritations have been removed he concludes that these two areas—the tuberculum septi and the opposite wall of the nares, namely the anterior extremity of the middle turbinated—are two of the most sensitive portions of the Schneiderian membrane. He believes that inefficacy in treatment of some cases of reflexes is because too much attention is given to the inferior turbinated, to the exclusion of the middle. Some cases of vertigo of Menière's disease are cured by removal of polypi from the middle meatus—a coincident condition found in many cases of this disease. "The reason why anomalies of the nose give severe reflex symptoms in some patients and no disturbance in others must necessarily be explained by the different nervous predisposition" or susceptibility. He also found that

asthma would frequently cease immediately on removing a septal spur that was irritating the mucosa of the middle turbinated, while, on the other hand, the asthmatic attacks increased if, previous to this operation, he cauterized the turbinal mucous membrane. A very small polyp, irritating the tuberculum, etc., by pendulum motions in the current of respired air, caused more reflex symptoms than much larger ones elsewhere.

PALMER.

Pluder, T.—On the Place of Tonsils in the Organism.—*Monats. für Ohrenheilk.* (April, 1898), *Jour. Lar., Rhin., and Otol.*

As a part of the hæmopoietic system, they form young leucocytes (daughter cells of the follicles), most of which pass into the circulation ; but some escape into the free epithelial surface, where they may, perhaps, exercise some protective action. 2. They excite old leucocytes, which probably carry off with them effete products.

Their period of chief activity is in childhood and youth, when all the lymphatic organs are specially active and when the thymus—a large blood-forming gland—is disappearing.

With regard to the protective (phagocytic) action of the tonsils, which Galland alleges is increased by hypertrophy, Pluder maintains that, while the whole mucous membrane has protective powers, the tonsils are its weakest point, and cannot even protect themselves, as shown by their liability to inflammation. Fraenkel's observation, that children with enlarged tonsils enjoy a certain immunity from diphtheria, is not generally confirmed.

The antitoxic (or alexive) action of the organism is specially connected with the blood and the leucocytes. Immunity is not simply a question of phagocytosis, for it is certain that the vitality of the microbes must be first reduced before phagocytosis comes in.

Pluder finds adenoids most frequent in children of the middle and better classes ; and he also observes that mentally deficient and backward children seldom show greatly enlarged tonsils. The lubricating and absorptive functions of the tonsils are subordinate.

PALMER.

Thompson, J. Tatham.—Foreign Bodies Retained in the Cornea.—*British Med. Jour.*, Febuary 5, 1898.

The writer presents the following rather remarkable case:

The patient, O. J., aged sixty-three, gave the following history. In October, 1873, whilst acting as a marker at the rifle range near Usk, a "splash" from a bullet struck him on the left cornea. Within a day or two he went to Bristol, where he was treated by Mr. Bartley, and several attempts were made to remove the foreign body. He was told at last that it was imbedded so deeply that any further attempt would be dangerous, but that it was possible it would heal over, or would become loosened spontaneously. In a few days all inflammatory symptoms disappeared, and he has had to depend on that eye ever since, as the right eye had been capable of little more than perception of movement for many years, the result apparently of old kerato-iritis. All had gone well until two months before I saw him, when, while milking a cow, he got a "swish" from the tail on the left eye. Shortly after that the eye became very irritable; occasionally there were great pain and photophobia, but this had not been so marked during the last fortnight.

I found an almost circular ulcer of the cornea just below the lower pupillary margin, not very deep, its edges slightly infiltrated, the floor of a pale orange color; there was considerable injection of the vessels at the adjacent sclero-corneal border.

Thinking it possible, from the history, that the foreign body might still be present, and that the recent irritation might be due to its having been disturbed from its long rest by the blow, I put the eye under the influence of cocaine, and, scraping carefully with a "spud," found the ulcer filled with soft cell tissue, which readily came away, and revealed a dark metallic object lying deeply in the corneal tissue. Carefully working at the edge of this, I was able to lift out of its setting a shell-shaped fragment 3 mm. by 2.5 mm., which proved to be lead. So deep was it lying that the thin layer of tissue remaining bulged forward on the slightest pressure being applied to the globe. The eye was dressed with mercuric perchloride solution and iodoform ointment, and a supporting absorbent pad applied. Recovery was very rapid and complete, the patient being able to resume full use of the eye in fourteen days. His V. = $\frac{6}{9}$ and with + 3 D. he could read Jaeger 1.

I think that this case may be taken as illustrating the retention of a foreign body in the cornea for twenty-two years: indeed, had it not been for the accidental disturbance by the cow's tail, it might have been retained in a quiescent state indefinitely.

DEADY.

Phillips, W. C.—Primary Epithelioma of the Antrum of Highmore.—*Jour. Lar., Rhin. et Otol.*, July, 1898.

Primary epithelioma of antrum is rare, primary sarcoma more frequent. Many reports by earlier observers of epithelioma apparently describe sarcoma more nearly. Heath states that the only cancer invading the upper jaw in his experience is medullary or encephaloid, but scirrhus has occasionally been met with. Epithelioma may originate from under the periosteum in bone substance or alveolar substance, and from epithelial layer of mucosa or lining of glands. These extracts are given of reports of fifteen authentic cases: One by Lawson; Epithelioma tenbrant of Maxillary Sinus by Reclus; a second by same; Epithelial Carcinoma in left Antrum Highmori, case by Englisch; Squamous Epithelioma of upper Jaw by Butlin; Cancer of the Antrum by Ziegler; Epithelioma du Sinus Maxillain by Trelat; Carcinoma Maxillæ Superioris Sinistræ (extirpation and recurrence in six months) by Bardelebin; Carcinoma of Antrum by Robbins; Epithelioma of left Maxillary Sinus by Vemeuil; Case of Epithelioma of the Antrum of Highmore by De Gaetano; Uber Maligne Transformation Gutartiger Geschwülste der Highmorshöhle by Fink; Carcinoma of Ant. of High., and Nasal Polyp by Dunn; Ein Fall von Primärem Epithelial-Carcinom der Oberkieferhöle by Reinhard; Carcinoma dell' Antro d'Higmoro, etc., by Miolai, also a case occurring in a horse. Finally gives full report of a case of author's own extirpation and no return, now one and a half years. The growth had commenced as polyp some six or more years previous, with antral empyema, for which a Cooper's operation had been performed. Four months before extirpation a growth forced itself through the alveolar opening. This whole growth was removed and inner walls antrum curetted. The mass was examined by two microscopists, who pronounced it polypoid tissue, one end of which was undergoing epitheliomatous degeneration. Two cuts of microscopical sections are appended.

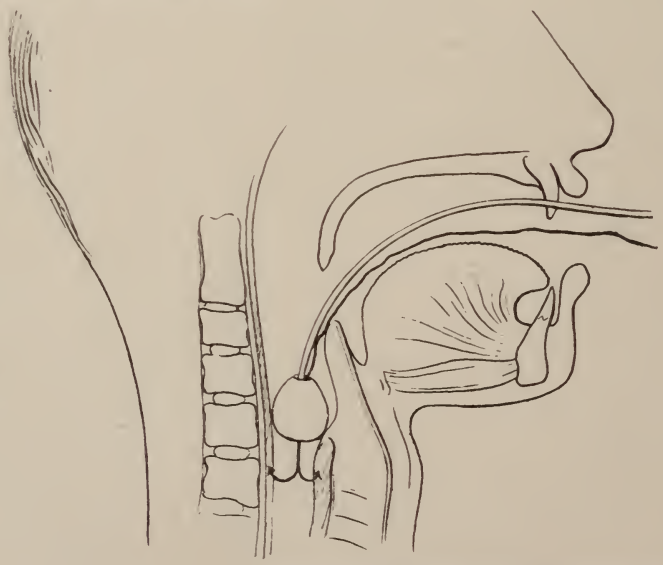
PALMER.

Woodbury, F.—Urticaria Involving the Larynx and Causing Asphyxia.—*Phil. Polyclinic*, July 2, 1898.

A clinical case. Man forty-five years aet., healthy, was overworked and lost much sleep, was suddenly attacked with faintness, difficult and hurried breathing, rapid pulse, profuse cold perspiration on forehead, countenance anxious and haggard, and sank to floor apparently asphyxiated; was revived by dashing cold water in the face, hypodermic of strychnine $\frac{1}{100}$ gr., followed by ditto of morph. $\frac{1}{4}$ gr. + atropia $\frac{1}{150}$ gr., also sprt. am. arom.—diagnosis made by finding that this was preceded by and accompanied with a swelling and congestion of and burning around the mouth and face, as also an intolerable itching on the legs, the rubbing of which caused genuine and urticarial wheals.

PALMER.

Dr. Walker.—Drawing and Description of Sir Robt. Christinson of a Method for Removal of a Double Fish-hook from the Gullet (Date 1819).—*Jour. Lar., Rhin. and Otol*, June, 1898.



EDINBURGH, September 24th 1819.

Dear Sir: The rude sketch given above will communicate a pretty good idea of the mode in which the hook was extracted

from the boy's throat at our hospital here about a fortnight ago. The hook was double (one division being less than the other) and had fixed itself across the gullet from before backwards though not so far down as I have represented it. The wire attached to it hung out of the mouth. A hole was drilled through the ivory ball of a probang, but not in its center, the reason which is evident when it is considered that the two divisions of the hook were unequal. The boy was able to give a tolerably accurate description of its size and form, so that it fortunately happened that the ball suited it exactly; both barbs were covered by the ball, and the whole was easily removed after being first slightly pushed down in order to loosen the attachments of the barbs. The extraction was considerably facilitated, in the opinion of the surgeon, by previous suppuration. Though it had remained about twelve days the boy recovered without a bad symptom.

I remain, yours most sincerely,

R. CHRISTINSON.

PALMER.

Pachard, M. D., Francis R.—Reflex Disturbances of Nasal Origin.—*The Phil. Med. Jour.*, July 16, 1898.

"This (nasal irritation) may cause such symptoms to arise in far-distant organs as to mislead the attending physician into completely overlooking the nasal orgin." It is important to bear in mind that the naris receives its sensory and vasomotor nerve supply from branches of the fifth nerve. Ziem in 1885 classified nasal reflexes as, (1) of infection, (2), nervous, and (3), mechanical origin. In diagnosing, the first and third must first be excluded before deciding upon the second. Under the second class he gives neuralgia, migraine, vertigo, syncope, visual spasms, asthma, laryngeal spasms, exophthalmic goiter, and general depression.

Other conditions subsequently reported as caused by nasal or pharyngeal irritation are, epilepsy, temporary total blindness, complete aphonia, severe and protracted salivation accompanied by profound mental depression, chorea, aprosexia, neurasthenia, glaucoma, asthenopia, disturbances of the sexual apparatus Also averes and explains why the reflexes usually accompany the lesser

abnormalities of the naris. Headaches associated clinically with chronic nasal catarrh are, (*a*) reflex, (*b*) neurotic, or (*c*) inflammatory. PALMER.

Zuech, Otto.—Bacteriological Investigations in Whooping-Cough.—*Munch. med. Woch.*, June 7, 1898.

Reports in examination of two dozen or more cases, as previously, he found a bacillus somewhat larger than the influenza bacillus. They are more numerous in the earlier weeks of the cough. A description of the mode of examination is appended. Negative results were obtained from inoculation.

PALMER.

Hanzel, Friedrich.—A Case of Sarcoma of the Larynx.—*Wien. klin. Woch.*, June 9, 1898.

A case of spindle-celled sarcoma of the vocal cord, near the anterior commissure, size of hazel-nut. A month after extirpation and cure the patient died of a sudden attack of asphyxia without apparent cause. The occurrence of this disease in stable employees is frequent. PALMER.

Stricky, J. A.—Injury to Inferior and Middle Turbinals in Operation for Deviation of Septum.—*The Lar.*, September, 1898.

After giving four clinical histories, he says these are fractures, dislocation and polypoid degeneration or granulation tissue growth, caused by not sufficiently reducing the resiliency of the septum before introduction of splint; and by too little attention given to adapting the shape and size of splint to that of nares to be operated on, and finally to the improper adjustment of splint in the middle instead of inferior meatus; a splint straighter and narrower than Asche's preferable.

PALMER.

Berens, Bernard.—Wool Tampons in the Control of Nasal Hemorrhage.—*The Lar.*, September, 1898.

Claimed that these swell more regularly and evenly than cotton, do not become as hard as the latter; therefore when need removal will absorb oil or other lubricant, and can be removed with less danger of renewal of hemorrhage.

PALMER.

Thomson, St. Clair, London.—Nasal Hydrorrhœa.— *The Lar.*, November, 1898.

This is an affection in which there is profuse watery discharge secreted by the nasal mucosa and *not* dependent upon intranasal or neighboring sources of irritation. Handkerchiefs soaked in this discharge usually dry stiff. The amount of discharge may vary from a trivial quantity to a pint in a day. Great care must be taken in excluding cases of nasal discharge dependent upon slight contact of nasal surfaces, sinus disease, and the escape of cerebro-spinal fluid through the nares. It is probable that thirteen of the eighteen cases of hydrorrhœa collected in Bosworth's book were the escaping of cerebro-spinal fluid. Non-surgical, general treatment, hygienic, dietetic, and climatic, is advocated. The fullest article on this subject will be found in Vol. LXXXII. of the *Medical and Chirurgical Transactions*, 1898.

PALMER.

Shambough, Geo. E.—Purulent Discharge from the Nose.—*Med. Standard*, September, 1898.

The following conclusions are deduced by the author. 1. Purulent discharge from the nose is a common symptom of intranasal disease. 2. Its presence may be detected by the patient; but often complains only of secondary symptoms produced by the pus. 3. Older writers described all the cases as "purulent rhinitis," etc., and never suspected what we now know to be true, that in the majority of cases the pus has its origin in one of the accessory cavities of the nose. 4. Pus in the nose may come from (a) disease in the nose itself, (b) suppuration in the accessory cavities, or (c) suppuration in the post-nasal space. 5. The diseases in the nose are (a) purulent rhinitis, found in children, in infectious fevers, in acute rhinitis, and gonorrheal infection; (b) ulceration, either traumatic, as the erosion in the anterior nares, the idiopathic perforation, ulceration due to action of chemical agents, foreign bodies, larvæ of insects and perichrondritis, either tubercular or syphilitic. 6. The accessory sinuses of the nose form two groups; the first group, including the maxillary, frontal, and anterior ethmoidal cells, opens into the middle meatus of the nose. The second group, including the sphenoidal and posterior ethmoidal, opens into the olfactory space between the middle-turbinated bone and the septum. 7. Differential diagnosis of dis-

ease of these cavities is one of the most difficult problems in rhinology. It requires the knowledge of the whole field of the technique of intranasal examination and a thorough knowledge of the complicated anatomy of the nose and its accessory sinuses.

PALMER.

Keiper, Geo. F.—Albuminuric Tonsillitis.—Report of Case of Spontaneous Hemorrhage from the Right Tonsil.—*The Lar.*, November, 1898.

The patient, a male, æt. thirty-two years, suffering from severe case of Bright's disease, the throat became acutely sore; examination revealed ulcer, size of gold dollar, in upper portion of left tonsil, covered with exudate resembling diphtheria, but removable without hemorrhage. Removal of which left a deep excavation. Twice an application of 12½ per cent. solution of nitrate of silver was made. On the afternoon of day on which last application was made a hemorrhage occurred from site of ulceration. A mixture of tannic acid and antipyrine was applied. Same evening another severe hemorrhage took place. Nine days later the patient died of Bright's disease. The author finds no other similar cases recorded; but considers it due to a similar condition of the arteries of the tonsil as pertains in the arteries of the eye in albuminuric retinitis. PALMER.

Soule, Isaac C.—Surgical Treatment of Septal Deformities, with the Exhibition and Description of Some New Instruments.—*The Hom. E., E. and Thr. Jour.*, November, 1898.

The instruments described are practical modifications of several already in use. The operations, with one exception, are generally in vogue. The exception is, in case of a horizontal ridge-like deflection of the cartilaginous portion of the septum without complicating outgrowths, the author takes out a cylinder from the vertex of the deflection, with a moderate-sized drill or Jarvis crown drill—cutting entirely through the septum; then with a small drill about $\frac{1}{16}$ inch in diameter he removes a part of a cylinder, or scores the edges of the deflection where it springs from the normal-shaped tissue; this latter is done on the *concave* side of the septum and serves to weaken the resistance when pushing back the abnormally placed septum. PALMER.

Stein, Otto J.—Vertigo, Especially as Related to Nasal Diseases.—*The Lar.*, December, 1898.

It has long been the opinion that vertigo is almost wholly of aural origin. Clinical case : Man forty-nine years ; good family history and very moderate habits. Complained of vertigo of four months' duration, accompanied by a faint distant buzzing tinnitus, which was aggravated just previous to attacks ; during attacks dazed, but never lost consciousness, sensation of ceiling coming down upon him or being inverted, skin icteric. Eyes normal, left drumhead perforated, hearing $\frac{12}{60}$, aural catarrh ; his liver, kidneys, and nervous system had been treated by various specialists with no avail.

In nares a general hypertrophic rhinitis, enormous hypertrophy of right middle turbinated pressing on septum, although latter deflected to the left—whole Schneiderian mucosa hyperæsthetic, irritation of certain portions causes spasmodic cough and *giddiness.* At first internal and local treatment for aural and nasal mucosa failed, while turbinotomy of right middle turbinated and cauterization of both inferior turbinateds cured.

Then Flourens and Goltz' theory of sense of equilibrium and vertigo are concisely given, as also several conditions, *e. g.*, intracranial tumors, cerebral hemorrhage, etc., which cause vertigo but cannot be explained by above theory. Politzer's and Luce's experiments, of removal of semicircular canal, etc., from the shank without causing loss of equilibration are discussed.

Finally the author argues that the *reflex theory* is most feasible and explanatory of all cases. This is that "an impulse is conveyed by a sensory nerve fiber to a central nervous cell or mechanism, and thence it is reflected by a motor fiber to some motor organ." In the nose the trigemimus or fifth cranial nerve is the principal sensory nerve ; others are the branches of Meckel's ganglion and vidian. Some consider that there are certain areas in the nares productive of certain reflexes, *e. g.*, sneezing, cough, etc. The author does not believe in these special areas. J. Mackenzie holds that there must be engorgement or hypertrophy of the erectile tissue before there are these reflexes, while Burnett, Hoffmann, Bosworth and Fraenkel disagree with this. Heymann, Rossbach, and neurologists in general believe that a neurotic predisposition must exist. Sundry nasal reflexes are enumerated, ending with vertigo of reflex nasal

origin, of which Joal reports nine cases; Häck, four; Fraenkel two; and Heryng, three; and Schmaltz and Massei report others.

The reflexes of the nose are (1) sensory; (2) motor; (3) secretory; (4) vasomotor; and (5) trophic. Vertigo can only proceed from motor or vasomotor. The irritation to the nose may either cause irritation of the co-ordinating center or centers through the afferent nerves; or the iritation produced by the congestion in the ethmoidal arteries and veins cause congestion of the same centers. This view is held by Bosworth, Joal, Fraenkel, Heryng, and others. A few consider vertigo due to the increase in the blood of such elements as the eosinophiles which are found during nasal reflex neuroses. PALMER.

Moure.—The Treatment of Sinusitis (Antrum excluded).—*Revue Hebd. de Lary.*, March, 1898.

Sinusitis presents the following forms, matters not which cavity is affected.

1. Mucous or muco-purulent discharge without complication.
2. A chronic suppurative form with the formation of fungous neoplasms.
3. A fistulous form with abscess and bony lesions.

In ethmoidal sinusitis the mucous form is generally intermittent and the treatment is the same as that for the Schneiderian membrane in general. In the latent and fungous forms the removal of the neoplasm and the free opening of the cells and cleansing washes are usually sufficient. In the osseous fistular form complete ablation of the diseased area is indicated, and sometimes external intervention by way of the orbit is also required.

In frontal sinusitis, the mucous form requires the same treatment as the milder forms of ethmoiditis. Cocainization of the orifice of the naso-frontal canal is usually indicated. In the suppurative and latent forms, in simple cases, the removal of the fungosities and antiseptic washes are sufficient; the more developed cases require catheterization through the natural canal, intranasal opening of the sinus, or treatment by external methods.

The intranasal opening is dangerous. With the external cure is obtained with less liability of new complications. After curettement, apply one to ten per cent. zinc chloride. It is not abso-

lutely free from relapses, as reinfection may come from the ethmoid or sphenoid.

In the osseous fistular form, the last-described treatment is required, but should be more radical in character. In the sphenoidal sinus we have also the same form of lesion. The mucous form is often mistaken for naso-pharyngeal catarrh. In the more serious cases, opening is required, but the electric drill and trephine are dangerous. The ablation of the middle turbinated, either in part or as a whole, facilitates the operation, which consists of perforating the interior wall by means of a stiletto or curette. In the combined forms of sinusitis, which are not infrequently met with, a combined method of treatment are required (Scheppegrell). PALMER.

Garrison, J. B.—A Case of Lupus of the Pharynx.— *The Hom. E., E. and Thr. Jour.*, December, 1898.

Master G. H., æt. twelve years. Family history slightly tuberculous; July 6, 1896, fell from horse, striking abdomen, causing considerable shock, and contusion of face and head, which was thought insignificant at the time. April, 1897, was attacked with rheumatism followed by sore throat. Latter part of summer mother noticed perforation of palate. Shortly after author saw him, and found an ulceration extending through uvula and soft palate to within half inch of hard palate, edges of cleft were slightly nodulated, but no ulceration seemed to be apparent—a distinct pale areola extended around the entire cleft. In the nares the whole triangular cartilage was gone, and bled easily. Treatment consisting in cleansing with H_2O_2, and calendula. Bacillinum^{200} powder once a week, and a local application with glass rod to the ulcerative surfaces every three days of solution of copper filings in strong nitric acid. The author considers the Bac.^{200} was equally effective as the strong local applications; in the latter the discusser of the paper disagreed, remarking that even Koch's lymph "has not been satisfactory in this disease." PALMER.

Bergonil, J., and Teissier.—Therapeutic Action of the X-Rays in Tuberculosis.—*Jour. Elect. Ther.*, October, 1898.

Portion of report of result of experiments: Pulmonary Tuberculosis. If in some favorable cases abatement of fever, improve-

ment of general state, and sometimes, though more rarely, modification of the local condition, have been observed to follow the use of the rays, these good effects have not been lasting; the disease has followed its course, and fatal termination has not been retarded by treatment. In some cases acute pneumonia processes have been set up, which, if not certainly tracable to the rays, were in close relation of time to the application. Serious digestive disturbance has also been observed after treatment. It may be taken as proved that up to the present time the action of the rays is, if not dangerous, of no therapeutic efficacy whatever.

PALMER.

Deschere, Martin.—Diphtheria: Antitoxin Homeopathically Considered.—*North Am. Jour. Hom.*, November, 1898.

After giving several extracts from reports of the physicians in charge of some of the larger hospitals in Germany and France which treat large numbers of this disease, some of which favor and others discountenance its promiscuous use, one enumerates the following as the bad effects of serum treatment: "Serum eruption in connection with rheumatism, . . . cervical adenitis, epididymitis, inclination to hemorrhage, albuminuria, localized œdema, and severe affections of the kidneys." After this very thorough consideration the author believes that there are certain forms or cases of diphtheria in which antitoxin is the indicated remedy, the same as any other of our old-tried friends, as merc., cyan., apis, etc. "The useful sphere of this remedy is in the beginning of the uncomplicated Klebs-Loeffler diphtheria, free from all admixture of other forms of bacteriæ, where the exudate is abundant from the start, and especially where tendency prevails for the invasion of the respiratory organs." These are the so-called "diphtheritic croup," with "a suspicious barking cough or a fine sawing respiration"—"here antitoxin seems to come in with really specific effect"; but it must be administered without delay.

PALMER.

Smith, S. O.—Asafetida for Excessive Sneezing (Clinical Case).—*Am. Hom.*, October, 1898.

Male, æt. twenty-one years; blond of neurotic temperament; has had frequent similar attacks in June and July (probably un-

complicated rose cold). Nasal mucosa hyperæmic and very hyperæsthetic; almost constant sneezing for three days, accompanied with some constriction of, and flying pains in, the chest; perspires very easily; no organic lesion was discernible. Asaf. 2x cured in four days. General, local, and climatic treatment had previously failed.

PALMER.

Wesner, M. A.—Arnica Montana in Acute Tonsillitis (Quinsy).—*Am. Hom.*, November 1, 1898.

The author claims to be able to abort quinsy when, beside the usual diagnostic symptoms, there are the following: Swelling, principally above the tonsil; patient chilly, but has fever; with thirst, voice husky and indistinct; unable to lie down in most instances; soreness of the muscles, and general malaise.

PALMER.

Juler, Henry E.—Interstitial Keratitis in Acquired. Syphilis.—*British Med. Jour.*, August 20, 1898.

The author's excuse for presenting this case is the variety of keratitis in the acquired form of syphilis. History was as follows:

The patient was a married woman, aged thirty-three, who had developed a sore on her genitals six weeks after marriage, and subsequently had had one miscarriage and a stillborn child at the eighth month. This was the sole evidence of syphilis. Ten years after the occurrence of the sore she suffered from a severe attack of irido-cyclitis in her left eye. This yielded to antisyphilitic remedies and atropine. A year later she attended again with peripheral choroiditis in the same eye, associated with some contraction of her visual field. This in turn subsided under similar remedies. She returned for the third time, after about a year's interval, with typical interstitial keratitis in her right eye. It presented the characteristic diffuse ground-glass appearance, and after a time became vascularized. It took about four months to run its course, and though yet not quite gone, the vision is much better. So far the left eye has not been attacked.

DEADY.

BOOK REVIEWS.

DISEASES OF THE EYE. A Handbook of Ophthalmic Practice, for Students and Practitioners. By G. E. DE SCHWEINITZ, A. M., M. D., Professor of Ophthalmology in Jefferson Medical College; Professor of Diseases of the Eye in Philadelphia Polyclinic; Ophthalmic Surgeon to the Philadelphia Hospital; Ophthalmologist to the Orthopedic Hospital and Infirmary for Nervous Diseases. With 255 illustrations and two chromolithographic plates. Third edition, thoroughly revised. Philadelphia: W. B. Saunders, 925 Walnut Street, 1899. Pp. 696. Price, cloth, $4.00; sheep or half morocco, $5.00 net.

The first edition of this book appeared in 1892, the second in 1896, and the fact that a third edition is already necessary is sufficient to indicate its popularity. The strong point in the book is that it is a veritable *multum in parvo*, treating all subjects concisely, and yet furnishing a large amount of information for the space covered. A number of new subjects are touched upon for the first time in the present edition, among which are "Favus of the Eyelids," "Blepharochalasis," "Kock-Week's Bacillus Conjunctivitis," "Pneumococcus Conjunctivitis," "Diplo-bacillus Conjunctivitis," "Parinaud's Conjunctivitis," "Pneumococcus Infection of the Cornea," "Mixed Infection of the Cornea," "Schizomycetal Infection of the Cornea," "Oyster-Shuckers' Keratitis," "Fugacious Periodic Episcleritis," "Roentgen Rays for Detecting Foreign Bodies in the Vitreous," "Retinitis Striata," "Hereditary Optic Nerve Atrophy," "Eucain and Holocain."

The articles on astigmatism, acute and chronic retrobulbar neuritis, diseases of the sinuses, color blindness, the treatment of insufficiencies of ocular muscles, and the chapter on operations have been largely rewritten, and a number of new illustrations have been added.

It is an excellent work, well gotten up by the publisher, and will repay careful perusal.

A PRACTICAL HANDBOOK ON THE MUSCULAR ANOMALIES OF THE EYE. By HOWARD F. HANSELL, A. M., M. D., Clinical Professor of Ophthalmology, Jefferson Medical College; Professor Diseases of the Eye, Philadelphia Polyclinic and College for Graduates in Medicine, etc.; and WENDELL REBER, M. D., Instructor in Ophthalmology, Philadelphia Polyclinic and College for Graduates in Medicine, etc. With 28 illustrations and 1 plate. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street, 1899. Pp. 182. Price, $1 50.

This little volume is divided into four parts—Part I. being devoted to anatomy and physiology; Part II. to structural anomalies; Part III., functional anomalies, divided into heterophoria and heterotropia, and Part IV., operations on the muscles.

Under structural anomalies the various palsies of the ocular muscles are considered, their symptoms, differentiation, prognosis, and treatment.

Under functional anomalies all the modern tests are introduced, including the tropometer, clinometer, and Landolt's ophthalmo-dynamometer.

The book is a good one, if for no other reason than the fact that all the muscular anomalies are considered in the same volume, and that the tests are up to date. In some of the statements made by the authors we fail to follow them, but that is a matter of personal opinion. The book is well gotten up and handy, and should be useful to the student.

OCULAR THERAPEUTICS FOR PHYSICIANS AND STUDENTS. By F. W. MAX OHLEMANN, M. D. (Minden, Ger.), late assistant physician in the Ophthalmological Clinical Institute of the Royal Prussian University of Berlin, etc. Translated and edited by CHAS. A. OLIVER, A. M., M. D. (Univ. Pa.), one of the Attending Surgeons to the Wills' Eye Hospital; one of the Ophthalmic Surgeons to the Philadelphia Hospital, etc. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street, 1899. Pp. 274. Price $1.75.

This volume is divided into two parts, a general and a special part. In the first are considered mechanical treatment, as massage, etc., thermic treatment, as warm and cold applications, douches, dry heat and bandages of various kinds; chemic agents, as antiseptics, aseptic preparation of instruments and of the hands, collyria, sub-conjunctival injections, astringents, ointments, mydriatics and myotics, narcotics and local anæsthetics, electricity, etc. In the second or special part, these various methods of

treatment are considered in connection with the diseases to which they are severally applicable. The affections to which the eye is subject are taken up in turn, and with the slightest possible mention of the symptoms of the disease, the proper treatment in all respects is outlined. The book contains a large number of prescriptions for preparations which have been found useful in the various conditions. It seems to be well up to date, and should be very serviceable to those engaged in this line of practice.

THE AMERICAN YEAR BOOK OF MEDICINE AND SURGERY, being a Yearly Digest of Scientific Progress and Authoritative Opinion in all branches of Medicine and Surgery, drawn from Journals, Monographs, and Text-books of the leading American and Foreign Authors and Investigators. Collected and arranged with critical Editorial Comments by Sam'l W. Abbot, M. D., Howard F. Hansell, M. D., Jno. J. Abell, M. D., Milton B. Hartzell, M. D., J. M. Baldy, M. D., Barton Cooke Hirst, M. D., Chas. H. Burnett, M. D., E. Fletcher Ingalls, M. D., Archibald Church, M. D., Wyatt Johnston, M. D., J. Chalmers DaCosta, M. D., W. W. Keen, M. D., W. A. Newman Dorland, M. D., Henry G. Ohls, M. D., Louis A. Duhring, M. D., Wendell Reber, M. D., D. L. Edsall, M. D., David Riesman, M. D., Louis Starr, M. D., Virgil P. Gibney, M. D., Alfred Stengel, M. D., Henry A. Griffin, M. D., G. N. Stewart, M. D., John Guitiras, M. D., J. R. Tillinghast, M. D., C. A. Hamann, M. D., Alfred Hand, Jr., M. D., J. Hilton Waterman, M. D., under the general editorial charge of George M. Gould, M. D. Illustrated. Philadelphia: W. B. Saunders, 925 Walnut Street, 1899. pp. 1102. Price cloth $6.50, half morocco $7.50. Sold by subscription.

One of the useful portions of this valuable contribution to medical literature to the busy reader is that found at the head of each division entitled, "Progress During the Year." This is a general survey of the field in that particular department, written by an expert in that special branch, indicating the really important additions to our knowledge for the year, the theories which have received confirmation from further investigation, the new methods of treatment which have sufficiently stood the test of time to be incorporated into the armamentarium of the professional worker, as well as those other theories and methods which have fallen by the wayside. To be able to take such a general view of the whole subject, seeing with the eyes of skilled experts in every line, and to have this knowledge conveniently gathered

within the covers of a single volume, is a saving of time and effort which should be appreciated by the reader.

When we drop generalities and get down to the actual reports from all quarters of the globe, on all possible medical subjects, the field is too great to cover in any reasonable space and we must perforce confine ourselves to a few abstracts respecting the subjects covered by the journal. Some interesting statements respecting laryngeal tuberculosis tend to show that this disease is not so invariably fatal as it has been regarded. G. Besold claims that the affection has in his experience proved to be very amenable to treatment in the early stages. He considers that his results are due, not to special expertness, but to his careful and constant examination of the larynx and his persistent treatment of the disease when he does find it. In 346 cases of tuberculosis he found 69 undoubted instances of tuberculous laryngitis, and 41 cases which were strongly suspected of this condition. Of the first series 32 per cent. recovered, and 37 per cent. improved, and of the 30 per cent. that were unimproved, more than half were gravely ill when first seen and soon died, chiefly from their pulmonary disease. Of the other cases which showed only slightly suspicious signs, more than half were cured.

He insists that the larynx should be kept at rest; coughing should be controlled; too much liquid food and too finely masticated food should be guarded against, as it is liable to enter the larynx and cause irritation; food should not be highly spiced, and, if necessary, the larynx should be cocainized before eating. Local treatment should be used, it necessary, beginning with powders and solutions, especially menthol solutions, and, if necessary, advancing to cauterization or scraping. He has seen no useful results from the use of tuberculin R.

G. Derscheid gives records of 270 laryngeal cases treated at Davos. One hundred and forty-four were cured, 12 are still under treatment and are recovering.

E. Jackson recommends as specially efficacious in detecting simulated blindness, the use of an 8-degree prism base out, before the supposedly blind eye; the movement of either eye outward (when uncovered), to avoid diplopia, proves the visual acuity of the alleged blind eye. This is not new, but very simple and well worth remembering.

Wicherkiewicz claims that he has avoided the necessity for

needle operations after cataract extraction in many cases by absorbing the lens or capsule remains by the use of 5 to 15 grains potass. iodide, three times daily, for several weeks after the extraction.

For the correction of entropion, particularly of the senile variety, Theobald recommends making a scar, three to four mm. wide all along the length of the lid, and about two mm. from the ciliary border, with caustic potash. The revival of a very old procedure.

The newest local anæsthetic is aneson, which in its commercial solution corresponds to a 2 per cent. or 2½ per cent. solution of cocaine, but has none of the latter's local irritation and is non-toxic. Sternberg strongly recommends it as a useful and safe anæsthetic.

Euphthalmin in 5 per cent. to 10 per cent. solutions is said by Winselmann to be an ideal mydriatic for diagnostic purposes, by reason of quick pupillary dilatation (two minutes), and because of the absence of effect upon the accommodation, the corneal epithelium, and the intra-ocular tension.

The department of otology is especially interesting, containing much information respecting the surgery of the lateral sinus and jugular vein and cranial suppurations of otitic origin, which are too lengthy to be treated in a limited space.

Respecting the relations between adenoids and aural disease, Frankenburgh reports the results of the examination of 158 deaf mutes, between six and a half and ten years of age. Of these 59, 45 per cent. had adenoids. Of the 42 cases that presented evidences of old or recent severe inflammatory disease of the middle ear, 88 per cent. had adenoids.

Respecting the dangers of operating for adenoids, Thompson reports the case of a nurse whose left carotid artery passed just beneath the mucous membrane of the pharynx, behind the posterior pillar. In an operation for adenoids the artery could hardly be avoided.

Schmiegelow reports a fatal case of curetting adenoids in a boy twelve years old. The operation was immediately followed by anterior hemorrhage, which was controlled by anterior and posterior packing. Respiration ceased and could not be re-established. At the autopsy, the right lateral wall of the naso-pharynx was found lacerated. In the internal carotid artery was a long

wound, just below the portion that enters the carotid canal of the petrous portion of the temporal bone. There were numerous enlarged glands contiguous to the artery.

The cause of the rupture of the internal carotid was not apparent, but the swollen glands probably had an influence on the fatal result.

Preble reports a fatal case of secondary hemorrhage, occurring on the seventh day after an operation for adenoids with the forceps, in an eleven-year-old girl. The bleeding at the time of the operation was slight. It began while she was walking in the sunlight. She fainted and the bleeding ceased under cold syringing. Later in the day it recurred, but was controlled by plugging the posterior nares. The next morning death followed recurrence of the hemorrhage.

He appends a report of three French and two Danish cases of true secondary hemorrhage. Hinkel adds seven cases of death, due to chloroform given for adenoid operation, to the eleven previously reported since 1892.

He states in conclusion: 1. Statistics show an exceptionally high mortality from chloroform anæsthesia in the operation for the removal of lymphoid hypertrophies of the pharynx. 2. The observations of Vienna pathologists show that sufferers from "adenoids" frequently belong to an abnormal constitutional type that has been found peculiarly susceptible to chloroform narcosis. 3. In view of the statistic and pathologic data presented, the general use of chloroform in the operation for hypertrophied tonsils and naso-pharyngeal adenoids is inadmissible.

The above quotations serve to indicate the class of matter presented in the work under discussion, and it will be seen that its value to the busy practitioner can hardly be overestimated.

THREE THOUSAND QUESTIONS ON MEDICAL SUBJECTS, arranged for self-examination, with the proper references to standard works in which the correct replies will be found. Second edition, enlarged. Philadelphia: P. Blakiston's Son & Co., 1899. Price 10 cents.

As stated in the title, this little book is a compilation of questions in anatomy, physiology, materia medica and therapeutics, chemistry, practice, surgery, obstetrics, gynecology, diseases of children, diseases of the eye, diseases of the skin, and dental

pathology in medicine, each question containing a reference to the work in which the answer will be found.

GLAUCOMA: ITS SYMPTOM VARIETIES, PATHOLOGY, AND TREATMENT. By ALEX. W. STIRLING, M. D., C. M. (Edinburgh); D. P. H. (Lond.); Atlanta, Ga. Member of the Ophthalmological Society of Great Britain; Late House Surgeon Royal Westminster Ophthalmic Hospital, London; Instructor in Ophthalmology and Ophthalmic Surgery Post-graduate Medical School and Hospital, New York; Ass't Manhattan Eye, Ear, and Throat Hospital, New York, etc. With illustrations from Micro-photographs. St. Louis: Jones H. Parker, 1898. Pp. 177.

In this volume are collected the lectures which were delivered by the author to the students of the Post-graduate Medical School and Hospital of New York. They have already been published serially in "Annals of Ophthalmology," and are now offered in book form.

The work is a careful compilation, covering our knowledge of glaucoma at the present time. The symptoms are thoroughly given and well explained. Under the head of ætiology the various theories of Mauthner, Ulrich, Donders, Weber, Knies, Brailey, Priestly Smith, Rheindorf, and others are considered "pro and con," the diagnosis and prognosis, the advantages and disadvantages, of all the various methods of treatment are set forth and indications are given for the proper performance of the operations which have been advocated for the cure of the disease, including iridectomy and its modifications, the several forms of sclerotomy, extraction of the lens, intraocular myotomy, and excision of the nasal nerves. The work is what it purports to be —a good course of lectures on the subject.

ANNUAL AND CYCLOPÆDIA OF PRACTICAL MEDICINE. By CHAS. E. DE M. SAJOUS, M. D., and one hundred associate editors, assisted by corresponding editors, collaborators, and correspondents. Illustrated with Chromo-lithographs, Engravings, and Maps. Vol. II. Philadelphia, New York, Chicago: The F. A. Davis Company Publishers, 1899. Pp. 607.

This, the second, volume of this fine work begins with bromide of ethyl and ends with diphtheria, the intervening pages containing a large number of valuable contributions by men who are specialists in their departments. Particular attention is called to

the articles on cerebral hemorrhage, by Dr. Wm. Browning of Brooklyn; cirrhosis of the liver, by Professor Adami of Montreal; cholera, by Professor Rubino of Naples; cholelithiasis, by Professor Graham of Toronto; diabetes, by Professor Lepine of Lyons; diphtheria, by Drs. Northrup and Bovaird of New York; catalepsy, by Professor Eskridge of Denver; cholera, by Professor Bondurant of Mobile; cocainomania, Dr. Norman Kerr of London; cataract, by Dr. Oliver of Philadelphia; constipation, by Professor Nathan S. Davis of Chicago; dilatation of the heart, by Dr. Vickery of Boston. An exhaustive review of the subject of "Deafmutism" is contributed by Dr. Holger Mygind of Copenhagen, one of the greatest living authorities upon the pathogenesis of this condition.

Many of the articles are really monographs on the subjects considered. The article on cataract covers eighteen pages and is fully as exhaustive as is found in many text-books on diseases of the eyes, and much better than some of them.

The subject of cholelithiasis is very thoroughly treated; twenty-six pages are devoted to it, and the latest pathology and treatment, both medical and surgical, are introduced.

The articles on cerebral abscess, cerebral hemorrhage, cirrhosis of the liver, conjunctivitis, and diabetes are full and excellent, while those on deafmutism and diphtheria are exhaustive.

In every article are introduced, in small type, abstracts from the very latest literature on the subject; the result being that the reader is cognizant of the best thought of the best men up to the date of publication.

The present volume fully sustains the excellent promise of its predecessor, in every way.

It contains a number of well-executed colored plates and many excellent cuts. The beauty and durability of the publishers' work we have before called attention to.

THE PHYSICIAN'S VISITING LIST, for 1899. Forty-eighth year of its publication. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street.

This handy little book appears in its usual form, containing the calendar for 1899 and 1900, table of signs for entries in the book, metric system, table for converting apothecaries' weights and measures in grams, dose table, emergency treatment in asphyxia and apnœa, comparison of thermometer scales and new complete

table for computing the period of utero-gestation—the whole making a convenient, leather-bound little pocket-book.

A Pocket Medical Dictionary, giving the pronunciation and definition of the principal words used in medicine and the collateral sciences, including very complete tables of the arteries, muscles, nerves, bacteria, bacilli, micrococci, spirilli, and thermo-metric scales, and a dose list of drugs and their preparations, in both the English and metric systems of weights and measures. By Geo. M. Gould, A. M., M. D., Author of the Illustrated Medical Dictionary, etc., etc., etc. A new edition, entirely rewritten and enlarged, including over 21,000 words. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut St., 1898.

The publishers call special attention to the following features of this little book:

I. The simple and practical system of pronunciation.

II. The large percentage (about seventy-five per cent.) of words specially pronounced.

III. The concise definitions.

IV. The omission of rare and obsolete words out of place and useless in a book of this character. It would have been easy to add five thousand such words.

V. The many valuable tables, especially that of Clinical Eponymic Terms, a novelty that in itself is worth the one dollar asked for the book.

VI. The style in which the book is made, the types, shape, printing, and binding.

VII. The size of the book. By the use of specially made thin paper, narrow margins, the exclusion of rare and obsolete words, etc., the bulk has been so reduced as to be properly called a *pocket* dictionary—"infinite riches in little room."

The Phonendoscope and its Practical Application. By Aurelio Bianchi, M. D., Parma, with translations of special articles by Felix Regnault, M. D., France, and M. Anastasiades, Greece. With thirty-seven illustrations. Translated by A. Geo. Baker, A. M., M. D., Physician in Chief of the Chinese Medical Dispensary, Philadelphia, etc., etc. Philadelphia: Geo. P. Pilling & Son, 1898. Pp. 77.

This book is devoted to a careful explanation of the methods of using the phonendoscope in the examination of the various organs of the body. The plates consist mainly of diagrams of organs mapped out on the body of the adult male. The whole appears to be an excellent description of the methods of using the instrument, including a comparison with the outlines of the organs as determined with the X-rays, a mechanical description of the phonendoscope, and the details of its application in the course of pregnancy.

THE AMERICAN HOMEOPATHIC OPHTHALMOLOGICAL, OTOLOGICAL, AND LARYNGOLOGICAL SOCIETY.

The plans for the Twelfth Annual Meeting of the American Homeopathic Ophthalmological, Otological, and Laryngological Society are rapidly being perfected. It will be held at Atlantic City, N. J., June 19 and 20. These dates just precede the meeting of the American Institute, which will begin its session June 20.

The headquarters of the Society will be in the Hotel Dennis, one of the most popular and attractive hotels in Atlantic City, with an uninterrupted view of the ocean. The sessions of the Society are to be held in the music hall of the hotel, which is well lighted, will seat about three hundred, and is sure to be cooled by the ocean air. It is earnestly hoped that every member of the society and everyone interested in diseases of the eye, ear, nose, or throat will arrange to be present. More than a score of papers are already being written, and as many more have been promised for the meeting.

Of special interest will be the exhibition of pathological specimens, of new apparatus and instruments, and of drawings and photographs of cases. If anyone has anything interesting in these departments which he desires to exhibit, he will please notify Dr. H. W. Hoyt, 75 South Fitzhugh Street, Rochester, N. Y. It will make no difference whether you are able to attend the meeting or not, the exhibit can be arranged for with Dr. Hoyt, who will see that it is properly cared for during the meeting and returned to the owner.

Papers will be read upon the action of belladonna upon the eye, upon the ear, and upon the throat, by members who are especially interested in each of these departments. Among the other subjects that will be discussed by some of the ablest of our school are strabismus and secondary cataract.

Everyone who intends to present a paper should send its title to the President or Secretary on or before *April* 1, and the papers must be in hands of the President or Secretary by *May* 1, so that proper arrangements may be made for the discussion, and the discusser may have time to fairly think over and digest the paper before the meeting. The papers are not expected to occupy more than twenty minutes in reading and the opening discussion not more than ten minutes.

Everyone interested in either of the departments represented in the society will find it of the greatest service and value to become a member. Almost all of the homeopathic specialists in this country are already members, and we urge those who are not to join before the annual meeting. Those who join soon will be presented with a copy of the Transactions for the last two years, of which there are about twenty copies on hand.

The same special railroad rates will be arranged for those attending the meetings of our society as have been made for the American Institute, and special hotel rates can also be obtained. A circular will soon be issued by the Hotel Dennis giving members an idea of the accommodations and rates. We earnestly advise those who think of attending the meeting, which should include not only all specialists, but all general practitioners who are interested in these subjects, to apply for rooms at as early a date as possible, in order that there may be no disappointment at the time of the meeting. We urge everyone to make an early effort to not only prepare a paper, but to make this trip to Atlantic City a part of his summer outing.

ELMER J. BISSELL, *President*,
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EDITOR.
CHARLES DEADY, M. D.

ASSOCIATE EDITOR,
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CONCERNING THE CATHETERIZATION OF THE FRONTAL SINUS.*

BY CHOLERVA, BERLIN.

ON account of the extended experience of the author in a large polyclinic of his own, and as assistant in another, both in Berlin, his opinion that catheterization is possible should carry much weight.

Investigations, such as those of Juruz, Moldenhauer, Schech, Hansberg, and Bersgen, strengthen me in my opinion, although I must admit that by only one, Hansberg, has the technique of catheterization been minutely considered. Others again, with whom I had a personal interview, spoke against it, without being able to give convincing reasons therefor. On account of which I was glad to obtain the views of Zuckerkandl, which he gives in the following language in vol. xiv. of Real's Encyclopedia, "The easier it is for an exudate to flow out of the frontal sinus, the more difficult it is to catheterize such sinus, and when catheterization has apparently succeeded, it is not beyond doubt." The higher an author stands in the estimation of his confrères the more weighty are his opinions and writings.

But we ought to remember that one, in order to be a good anatomist, has no need of being a surgeon; but, on the other hand, an able surgeon must always be a good anatomist.

* Translated and abstracted by Thomas J. Harris, M. D.

At all events, Zuckerkandl reasons as an anatomist and not as a surgeon; it is as the former that he acquired his rightful reputation.

In the course of this article we will often observe that nothing escapes the keen eye of the anatomist in his researches in the nares, still he lacks the specialist's practical experience with the living tissues, which it is absolutely necessary to have in addition to the anatomical knowledge to execute good practical work.

In order to definitely reconcile these contradictions, at least for myself, I undertook this winter a series of cranial dissections, to consider the anatomical relations, particularly directing study to the catheterization of the frontal sinuses. They have led to the results which I have the honor of presenting to you now. (1) In what cases, in the human being, is the frontal sinus capable of catheterization? and (2) In what cases are they not?

The settlement of these questions I undertook.

The answer is short: In cases with normal anatomical formation the frontal sinus is capable of catheterization in the living subject. And why should it not be so? Let us for a moment look at the relations in the disarticulated skull or, better still, in an individual ethmoid bone. This, held in the position it would occupy if the head were held somewhat backward, reveals anteriorly at the insertion of the middle turbinated a "cavity or cell, of which the inner lamella is formed by the middle turbinated, the outer by the processus uncinatus, and the middle portion by the ethmoidal cells, which should be considered the insertion point of both lamallæ of bone.

Yet not alone on this account is this cell of importance, but by its posterior wall it forms a portion of the anterior and superior boundary of the infundibulum, and borders laterally directly on the frontal sinus. Behind and directly above this cell we find the bulla ossea and ethmoidal cells, most of which lie directly over the cell, the walls of the ethmoidal cells, being almost perpendicular, form the posterior boundary of a canal (the naso-frontal canal),

while the anterior wall is formed of that front cell in question, externally by the lachrymal bone and medianly it is open in the disarticulated skull.

This half-open canal is the termination of the hiatus semilunaris, and at its upper extremity is an opening which communicates with a half-cell. This half-cell forms, with the sinus frontalis of the frontal bone above the frontal sinus, the opening in the floor of the foramen frontal.

In order to enter the frontal sinus one must seek this half bony canal, which is comparatively straight and perdendicular, and which, on account of its external wall being formed of the lachrymal bone, is not to be found directly on the middle turbinated (as Hansberg considers), but more external.

If now we examine a sagittal section of a skull in which the turbinated bodies and mucosa remain, the conditions change, inasmuch as the catheterization is even rendered easier. The mucous membrane in the lower portion of the hiatus semilunaris is like a cushion, and loosely covers the opening in the os maxillari, while in the upper portion it is tensely drawn over the processus unciformis. The fold of mucous membrane, which at the foramen makes the catheterization of the antrum, together with the bulla ossea, often impossible, exists here merely as a perpendicular curtain running rather sharply backward.

If now Zuckerkandl insists that the ability to see the ostea of the frontal and maxillary depends upon the width of the hiatus similunaris, he is in error, as also is Juruz ("Diseases of Upper Air-Passages"), who regards catheterization only possible when the hiatus semilunaris is visible on rhinoscopic examination. Furthermore, Hansberg asserts that in none of his numerous preparations would it be possible to see the outlet of the frontal sinus, on account of its being covered by the middle turbinated. In this respect Hansberg is correct. It is not only this anterior extremity of the turbinated which shuts out our view, but it is the location of the infundibulum, being external and above the middle turbinated, which conceals the entrance still more.

The construction which deceived Juruz was probably this very cell in question, which is fully described above. While this really should be considered a landmark for getting into the sinus.

But we will never be able to get a view into the cavum itself. On account of the position of this cell at the anterior extremity of the turbinated, this cell will seldom be hidden from sight even if there is turbinated hypertrophy.

An increase in the length of the anterior extremity of the turbinated will not interfere with the catheterization, especially if we have the head thrown well back. Nothing but a hypertrophy of the turbinated bone itself will make this manipulation impossible. Besides these cases of bony hypertrophy, to which Zuckerkandl calls particular attention, those cases are difficult to catheterize in which the articulation of the anterior extremity of the turbinated with the lateral wall of the nose is broad, thereby exhibiting, instead of the cell, merely a cleft-like slit situated far back.

Then, again, in cases where a deflection exists in the upper portion of the septum, pressing the turbinated toward the external wall, catheterization will be impracticable. These are anatomical abnormalities. I have already shown that I believe that a vertical enlargement of the anterior extremity of the middle turbinated with a straight septum is no obstacle to catheterization. In such cases I advise to slightly dislocate the turbinated toward the septum; this is easily accomplished, especially if we incise the cell located at the insertion of the anterior extremity of the turbinated. In this manner the removal of this portion of the turbinated is frequently avoided. In like manner, a number of the difficulties mentioned above may be overcome. These only lie at the commencement of catheterization, but if overcome the remainder of the procedure is easy.

Regarding the instrument, it is necessary to have a sound which is shaped to conform to the peculiar form of the canal traversed. Hansberg constructs one of flexible material, and bends the distal 3 cm. of the sound at angle of 125° from the main straight position. With this I agree, except

in addition I make a second short curve at the end of the sound toward the side which is to be catheterized, in order to conform to the shape of the infundibulum which is external to the processus unciformis. With such a sound, if the head is strongly directed backward and outward, we enter the cell at the anterior end of the turbinated. Now it is important to drop the sound onto the floor of the nares, but with a little perpendicular movement of the whole sound to pass the straight part of the canal between the bulla ostea and the anterior wall of this cell into the cavity. If this is accomplished, the handle will be perpendicular to the plain of the canal, the rotation of the sound outward corresponding to the second curve near the point. This motion makes the introduction through the infundibulum and foramen frontalis into the sinus an easy matter.

Should you, on introducing the catheter, at first sink the handle upon the floor of the nose, and, following the advice of Hansberg, hold it more in the median line, you will undoubtedly push against the anterior ethmoidal cell, which we have shown above to be the attachment of the middle turbinated and processus unciformis—or the catheter would be in a recess which, according to Zuckerkandl, frequently occurs at the juncture of the turbinated and this cell. In both cases, a rotation of the sound outward would be prevented by the base of the processus unciformis, and catheterization of the infundibulum in this manner rendered impossible.

We see, then, that we need take no account of the "unknown clefts and grooves" in the catheterization of a normal sinus, and provided one has an accurate knowledge of the topographical relations this may be regarded as comparatively easy.

According to Hansberg, you may consider you have succeeded if the sound has entered 60 mm.; but according to my measurements, the distance from the introïtus narium to the sinus frontalis is 70 mm. The question now is, is the catheter in the frontal sinus itself or is it in that cell which Steiner says represents the frontal sinus, but which

in my opinion only assists in forming a portion of the same? It seems to me that Hansberg has catheterized these "inclosed cells" when in reality the sinus frontalis was at least 10 mm. from the anterior wall of the cavity found—the communication being through a large ethmoidal cell lying in front thereof.

If Hansberg had attempted to catheterize this cell from the infundibulum externally he would probably have found these cells would correspond to the normal position of the sinus frontalis and that the opening should be considered an accessory one into a secondary cavity in the sinus frontalis.

From the investigation of Steiner we know that these ethmoidal cells, globular in shape, jutting into the sinus frontalis, are most intimately connected with the development of said sinus. If we cannot agree exactly with Steiner that the main cavity of the frontal sinus opens out of this cell, we must admit that it is of importance in catheterization of the sinus frontalis. (For the sake of distinction from the cell called "bulla osses Zuckerkandl" we will name this one the "bulla frontalis ossis ethmoidis.") Zuckerkandl says regarding it (p. 38), "occasionally the groove (hiatus semilunaris) ends in an ostium which opens into one of the most anterior cells of the ethmoid bone, which almost wholly projects into the sinus frontalis."

In specimen M1 we see such a cell jutting out into the sinus frontalis. This section has intersected the inner angle of the left orbit, and shows the sinus frontalis and the ethmoidal cells opened externally. In this case the sinus is extremely large and the lamina of the os frontalis very thin. The outlet of the sinus frontalis indicated by the sound is situated behind the bulla frontalis ossis ethmoidis and opens through the infundibulum into the external superior portion of the nares.

But I regret to note that in this otherwise finely executed section, the second sound which is introduced through the infundibulum and foramen frontalis makes its appearance in that cella bulla ossia Zuckerkandl and is freely

movable. Now on measurement we find that it is 75 mm. from the center of this bulla to the introïtis narium, and in the living subject it would have deceived us, indicating that we had entered the frontal sinus itself. Zuckerkandl would therefore have more aptly expressed it if he had called it *the* most anterior cell instead of one of the most anterior cells. It is always this cell, which is similar to the infundibulum, that obstructs the entrance to sinus—this cell may be small, and act as a valve or room, and deceive us into its being the sinus itself.

According to Steiner, we should always find this cell in the sinus frontalis, and that the other large cavity in our section may be regarded as a space formed by the wide gapping of the two laminæ of the os frontalis. Catheterization shows that this is the case, and therefore Zuckerkandl must be in error when he says: "Occasionally two ostia frontales lead into one and the same sinus frontalis, the one leads out of the infundibulum into the pneumatic space of the frontal bone—while the other through the recess under the extreme anterior end of the turbinate to another compartment of sinus," or as he further asserts, "If the sinus is divided by septa into three spaces three openings will be discovered."

If Zuckerkandl had used the sound delicately, as a rhinologist is wont to do, he would not have found three openings, but at the most two. The wider one, leading from the infundibulum into the enlarged cell, and the narrower, scarcely penetrable to the finest probe, into the accessory opening of the os frontalis.

In proof of my foregoing assertions my second specimen is of greater importance,—it is taken from the right side of a man's skull, showing the frontal sinus opened from the inside. In this specimen the bulla frontalis forms the posterior part of the frontal sinus—its posterior wall is articulated internally with the posterior lamina of the frontal bone, so that the boundaries are scarcely distinguishable. Its anterior wall is separated from the front lamina of the frontal bone by a space, one or one and a

half c. m. in width, which space should be considered an accessory cavity of the frontal sinus, because the sound introduced with the greatest care enters the bulla frontalis, which in this case is apparently the frontal sinus; while the second sound winds its way tortuously through a canal commencing at the insertion of the middle turbinated bone and enters in front of the bulla frontalis.

Zuckerkandl describes this canal as a groove 10 mm. in length, which is located alongside of the normal ostium frontalis leading into the right or left frontal sinus. I must confess that I have never found this condition in my preparations, and I believe that it must have arisen because Zuckerkandl used a specimen which was much macerated; which would easily cause an error.

Then, again, the same author says that between the anterior extremity of the middle turbinated and processus unciformis leading to the frontal sinus, therefore there would always be two passages to the sinus frontalis, which it is difficult to understand. We must hold to the opinion, and to my mind these two preparations are excellent illustrations thereof, that only in those cases where the proper passage into the sinus through the infundibulum is insufficient, is there an accessory communication through the bulla frontalis with the nares.

In the first specimen we have seen such a canal lying above and external to the infundibulum and in the second specimen one lying internal and above. They may be distinguished from the normal canal by their length, narrowness, and because they pass through ethmoidal cells.

If Hansberg describes this normal canal as one whose length is 10 mm., I think it is an error which probably arises from confusing it with the accessory canal in our second specimen. I confess, I have made a similar mistake, being mislead by an accessory canal which was external—above the infundibulum. There is scarcely a specimen in which this accessory canal cannot be found, but it ends blindly at the floor of the sinus near the normal opening. If it opens into the sinus it makes an accessory

bony walled canal varying in length in accordance to the part of the sinus into which it opens.

In addition to these two accessory paths mentioned above we may find a third which only exists when the infundibulum is wholly occluded—this is by a broad opening in the posterior wall of the frontal communicating with an ethmoidal cell lying next behind it, and thence to the canal situated external and above the infundibulum. In examination of over one hundred specimens I have found this last form communication only twice.

It stands to reason that in any of these three abnormalities it would be impossible to catheterize the sinus.

Not only have we no means of diagnosing these abnormalities in the living subject (transillumination is of no assistance), but, if ascertained, the narrowness of these canals would make it impossible to pass a catheter through them.

It is difficult to say just how frequently these irregularities exist, but should judge they are not over twenty per cent. of the cases.

If we add to the above the twenty per cent. in which catheterization is hindered by a marked defection of the septum or hypertrophy of the middle turbinated, still there remain sixty per cent. of cases in which it is not only possible, but can be easily accomplished if the operator only remembers not to use force in introducing said sound.

ON THE VALUE OF DIFFERENT FORMS OF ENERGY IN AURAL MASSAGE.

HENRY C. HOUGHTON, M. D., NEW YORK.

ANY discussion of aural massage at present should be one of methods, not merit. Since March 3, 1892, my attention has been patiently devoted to the application of massage to the ear by various instruments. I am now so grounded in my convictions that I do not care to spend time in debate on its merit: for me, that is settled. The questions now of great interest concern comparative value of those forms of energy which are used to produce massage.

Before my visit to Dr. Garey's clinic in Baltimore on the above-mentioned date, I had used Seigel's otoscope, an ordinary ear syringe, and a breast pump to draw outward, or to move to and fro, the membrana tympani, and in a very few cases had been able to secure good results. Dr. Garey's study of Dr. Maloney's use of the otophone devised by him led Dr. Garey to utilize the phonograph, and thus an impulse was given to investigation and experiment which has given many devices to produce the desired effect, *i. e.*, mobility of the auditory mechanism. A brief look at the auditory function will help us to understand what we need, and why.

The three parts of the anatomy involved—*i. e.*, external, middle, and internal ear—are fitted for distinct functions: reception, conduction, perception. It is with the second and third parts that we are specially concerned; it is evident that the first and second functions, reception and conduction, must be normal to secure normal perception.

It will also be evident on a closer study that disease which lessens the mobility of the membrana tympani and auditory ossicula, decreases the conduction of the middle ear, and hence, the perception by the internal ear. Perhaps nine-tenths of the cases seen are based on catarrhal changes, either hypertrophic or atrophic, with decreased conduction due to excess of tissue on the one hand or waste on the other, hence a tendency to diminished function (perception) from disuse (torpor) of the internal ear. Such being the case, massage has the same effect here as elsewhere: it increases the flow of blood to the part—hence, lymph changes; it stimulates terminal nerves—hence, nutritive changes, these corresponding with the mechanical effects to be seen through a speculum with a plus lens. Not only so, the massage is not limited to the middle ear; but the entire head is affected; and in sensitive patients symptoms of disturbance extend to the cervical region. Since March, 1892, nearly 1100 cases have been under observation, from which I have drawn certain deductions, and have also learned not to dogmatize. What I know is of limited range, compared with what I need to know. Beginning with the phonograph as utilized by Dr. Garey, I find that sound force generated by blows of the stylet of the diaphragm, dropping a greater or less distance into incisions upon the wax cylinder, act to increase the function of audition of irregular vibrations, noises generally, and to some extent that of regular vibrations (tones). Also, that subjective sounds are modified to some extent. There is, however, a possibility of increasing subjective sounds by too forcible vibrations, or too long applications of less forcible ones.

Failing to realize all that one desires from the use of the phonograph, I added the organ to my outfit, and soon found advanced ground and limitations. Regular vibrations (musical tones) were not only more agreeable to patients, but more effective in modifying subjective sounds! Still limitations were reached. The subjective sound was changed to an increased (higher) tone or decreased (lower)

tone, or the tone of the organ reed used in producing the massage kept up a subjective tone after treatment; this led to the device of an organ with an air chamber or resonator from which all chords based on some or any fundamental tone were taken to the ear. These abolish all subjective tones for a greater or less period after the sitting. In many cases of atrophic disease there is a want of muscular power in the pharyngeal and tympanal muscles due to waste of muscle or terminal motor nerve or both. In these the faradic form of electrical energy was used alone for months, then in connection with the phonograph, then with a telephone. Later, Dr. H. E. Waite succeeded in devising the instrument which he has kindly sent to us to-night, in which the impulse of sound force is made synchronously with that of the faradic current. In this I am satisfied there is opened a wide field for investigation—simply opened, I believe. There are questions in this direction that have been unanswered for a score of years.

In 1895 I had made by Waite & Bartlett a pump operated by a motor supplied by the Edison current of 110 volts modified by lamp resistance. This was attached to a stethoscope and used regularly as the initial factor in aural massage; for a time it was used in catarrhal cases alone, then on suppurative cases to some extent, the motive thought being found in Dr. Winslow's unique case reported some years ago, in which he used suction to draw an exudation from the attic. Siegel's otoscope had been used in connection with a syringe and breast pump, with indifferent results, long before the pump operated in connection with a motor. Recently, in changing my plant for office work, the Wappler Controller Co. made for me an instrument in keeping with certain ideas evolved by the successes and failures of the last seven years. The only part which is specially unique is the pump, which fulfills admirably the specifications for an alternation in the air current, same as I had in the one formerly used; also, a forcing or suction continuously; these Mr. Wappler has given me in a more simple mechanism than the sketch I made had indicated.

These three effects are distinct and specially valuable in a variety of cases. Blowing is a very effective mode of massage, specially valuable in long-standing disease, and at the beginning of treatment in connection with concussion. Suction is clearly indicated in hypertrophic and atrophic catarrh, as the tendency of the membrana tympani is inward, and in what is termed dry catarrh, adhesions have existed for months if not years. Also in suppurative disease suction is valuable, as it removes pus from deep-seated tissue and breaks up rigidity before the tissues become permanently fixed after the suppuration has ceased. This is a very important point. Later on it will be next to impossible to cause an active condition with exudate and control the same to the local area involved. In some cases it is difficult for the lay mind to see this, because the function is so much nearer to the normal standard that they are satisfied with what has been gained. We must keep up the treatment till a large margin is secured, because we know that there is a tendency to retrograde.

As to technique, I have come to adopt a routine which is the evolution of experiment; and is at the same time diagnostic as well as remedial.

The patient being seated, the stethoscope is placed in the meatus, and the pneumatic force applied: a blowing current for one minute in ordinary cases; in very deaf subjects it may be used longer; the effect is a very forcible massage of the entire head; after this use the pneumatic by suction, say, five minutes; this is less severe, but it draws the drumhead forward and puts the ossicula on tension; then finish with the alternate pneumatic action. This suction and blowing force moves the drumhead, ossicula, and all allied parts in rapid, to and fro motion, and produces a sense of warmth and usually some subjective sound. The phono-faradic instrument is then adjusted, the metallic terminies of the stethosocope are placed in the ear, another electrode on the back of the neck or upon the tongue, the negative pole to stimulate, the positive to cause

sedative action—regulating both the sound and the faradic force; about three minutes is given to this instrument.

This is followed by the single tone for three minutes after having determined what one seems indicated. In the great majority of cases, single tones cause modification of the subjective noises, and leave the tone used to dominate them afterward. I found early in the use of the single tone that I could overcome this annoying result by ending the sitting with the force of combined tones, harmony, based on the fundamental single tone used in treatment, F, B-flat, and E-flat being the ones found most useful. About twenty minutes is used in any one case.

In following out this course in connection with local and internal treatment, there occur many interesting phenomena on which we have no time to dwell. One may be suggested for study, *i. e.*, the modification of massage caused by inflation of the middle ear, during the sitting. Also, that those who hear better in a noise, such as on cars, or near machinery, hear well under massage.

It is my conviction that no one form of force will suffice for aural massage, no one instrument for treatment of all cases that need it. Strong vibrations at first, and in long-standing cases, then milder treatment with regular vibrations to bring out all possible function. Because the patient has come to hear sounds well, it does not follow that he will hear all tones well.

SPECIFICATION FOR OFFICE PLANT.

This consists of a $\frac{1}{20}$ horsepower motor whose speed is controlled by a rheostat.

A pump is connected directly to the revolving shaft of the motor, and means are provided to disengage the piston of the pump, when the motor may be used as a cautery transformer for the 110-volt direct current or as a drill.

The current for the cautery points is controlled by varying the speed of the motor. There is also a variable source of current for lighting small lamps (endoscopes), for working faradic coils, aural massage instruments, and galvanic current for electrolysis.

CASES OF ABSCESS OF THE BRAIN DUE TO CHRONIC OTITIS.

CHAS. C. BOYLE, M. D., NEW YORK.

WHEN we study the anatomy of the middle ear it is easy to understand how the extension of any septic disease of this organ is attained, through the close relations of the various parts of the middle ear to the brain. According to authorities 50 to 75 per cent. of all abscesses of the brain are due to ear diseases.

In abscess of the brain collections of pus may form on the surface or within its substance; in the former case, the membranes thickened by inflammation constitute one wall of the abscess; this is called a subdural abscess. Where it is in the substance of the brain, which is the most frequent of the two, the pus is separated from the surface by a layer of brain tissue normal or only slightly damaged.

The temporo-sphenoidal lobe suffers more than any other part on account of the frequency with which the cause of abscess of the brain is disease of the middle ear, over which this lobe lies.

Disease of the ear that causes abscess of the brain is usually chronic; it may have existed for years, before it causes the abscess; more rarely the trouble may have existed only a few weeks. In these cases there is usually caries of the bone following the inflammation of the middle ear or mastoid cells, and a purulent discharge from the ear has usually existed for a long time. In many cases it follows an increase of the ear trouble due to fresh cold.

The tympanic cavity and mastoid cells are separated from

the interior of the skull only by a thin layer of bone, which is readily destroyed; this is perforated by small veins which pass from the tympanum to the superior petrosal sinus and from the mastoid to the lateral sinus. The mechanism by which an abscess of the brain is produced by ear disease not continuous with the cerebral suppuration, is supposed to be due to the passage of septic material from the diseased bone through these veins, which pour the blood from the ear into the sinuses; also by the perivascular lymphatic canals. The roof of the tympanum forms part of the middle fossa of the base of the skull on which lies the temporo-sphenoidal lobe, and the superior petrosal sinus receives blood from both.

Disease of the tympanum causes chiefly cerebral abscess, that of the mastoid cells, cerebellar abscess; exceptions to this are occasionally met with. The initial symptoms are those of inflammation, but vary much in intensity; in many cases they are so trifling as to be overlooked. In severe cases they are correspondingly grave; this is always the case in acute abscess: the early inflammatory symptoms continue and increase to the end.

In the cases of chronic abscess, during the period in which the abscess is comparatively stationary there are few or no symptoms; this is termed the latent period. Ultimately acute symptoms supervene; they may be sudden and run a rapid course to end in death. The symptoms are in part those of inflammation, and in part they are those of an irritating foreign body, such as a tumor. This character is determined by the character of the morbid process, and by its seat; local symptoms, often such as afford an indication of the position of the disease, are absent far more frequently in abscess than in the case of tumor. This is due to two circumstances: first, abscesses are often situated in parts of the brain, as the temporo-sphenoidal and frontal lobes, where the disease often causes no local symptoms, whatever be its nature. Secondly, the pressure of a slowly developed abscess produces less grave effects than the pressure of a tumor. Symptoms frequently resemble those

of meningitis, which often co-exists; there is often some headache, vomiting, and febrile symptoms, attended in severe cases by rigors. Convulsions are less common; when general they indicate that the trouble is extensive and severe. Local convulsions occur only when the disease is in or beneath the motor region of the cortex. Paralysis is still less common; if have paralysis of extremities, it is on the side opposite to the abscess. The temperature at first may be elevated, and then normal or subnormal in uncomplicated cases; pulse tends to become slow, sometimes 40 or 20 per minute; also respiration low. If complicated with meninigitis, temperature will be elevated; severe rigors may occur; and we have delirium, which gives place to stupor, finally ending in coma and death.

The latent period of chronic abscess varies from two or three months to several years; if it is encapsule it may exist for a number of years without exciting symptoms, or may have slight symptoms, such as headache. The terminal stage usually commences suddenly, but is sometimes preceded by increase of headache, or mental symptoms. Vomiting and giddiness are often associated with headache. Optic neutritis or papillitis may be present; but is less common in abscesses than in tumors of the brain. The ocular muscles are sometimes involved, but there is rarely paralysis of a single nerve. The most frequent symptom is ptosis, generally on same side as abscess. Definite focal symptoms, slowly increasing, especially with progressive paralysis of cranial nerves, are in favor of tumor rather than of abscess, but the absence of these and the presence of a chronic suppuration of the ear is in favor of its being an abscess, also the rapid development of severe cerebral symptoms after slight indication of brain disease is in favor of abscess.

HISTORY OF CASE OF ABSCESS OF RIGHT TEMPORO-SPHENOIDAL LOBE.

Patient, Italian, aged twenty. Admitted to Metropolitan Hospital, February 22. Could not talk English; this, together with his being in a partial stupor, rendered it impossible to obtain any

previous history, except that he had had ear trouble. Two weeks ago began to have pains in head, located principally over frontal and top of head, especially over right ear. Pressure over mastoid and temporal regions elicited pain, more marked on right side. Patient lies in a stupor approaching coma ; roused with difficulty. Some vomiting, extremities cold, pulse weak and compressible ; heart action slow and feeble, but regular ; respiration rapid and shallow. Patellar, plantar, abdominal and cremaster reflexis absent. Temperature and pulse normal and subnormal, temperature never going above 100° and at times going down to 97.4°.

The first three days after being admitted to the hospital his temperature went up and down from 99° to 100°. On the fifth day it went down to 97.8, on the sixth to 97.6, on the seventh to 97.4, then up to 98½ on the day of the first operation. After the operation it went up to 99.8, then down to 97.6, then up to 98.6, and then to 98, 97.6, 97.4, until just before death it went up to 99.4. His pulse varied from 56 to 40 until after operation, when it varied from 102 to 74. Respiration kept from 18 to 22 until after operation when it varied from 18 to 16. Examination of urine negative in regard to albumen. Alkaline reaction, a few triple phosphates. I saw the patient at the Metropolitan Hospital, B. I., on February 25, three days after his admittance. The attending house physician, Dr. Chamberlain, had already made a diagnosis of abscess of the brain, to which diagnosis I agreed for the following reasons : The intense headache located principally over the right ear, together with a history although rather obscure, of previous ear trouble ; there was no visible evidence of it ; there being no discharge, no tenderness or swelling over the mastoid. The auditory canal had impacted cerumen, and when removed showed the membrana tympani reddened and congested, which might have been due to the removal of the cerumen ; there were no perforations of membrana tympani discovered in the hurried examination made. The ophthalmoscope showed a very marked optic neuritis or papillitis in both eyes, with some small hemorrhages in the retina surrounding optic nerve : as there was no albumen in urine this was not likely to be a neuro-retintis albuminurica, leaving the diagnosis to be either a tumor or cerebral abscess.

Papillitis is more frequent with the former, although you would have the pain in head, subnormal temperature and

pulse in both cases; but in tumor you are more apt to have some focal symptoms, such as paralysis, than in the case of abscess, especially if it is located in the temporo-sphenoidal lobe away from the motor centers. Gower says: "Definite focal symptoms slowly increasing, especially with progressive paralysis of cranial nerves, are in favor of tumor, rather than abscess; but the absence of these and the presence of a chronic ear trouble is in favor of its being an abscess."

Upon the symptoms present and the absence of others I formed my opinion, and determined to operate without any delay: first to open the antrum of the mastoid, although I did not expect to find any pus there, and after that to trephine the skull over the right ear. The mastoid antrum was opened by the chisel, and nothing was found, except an almost complete obliteration of the antrum, due to a hyperostosis caused by some previous inflammation of the mastoid. This supposition was found to be correct later on when we held the *post-mortem* and found a small opening into the cranial cavity through the posterior wall of the mastoid antrum. After being satisfied there was no pus in the mastoid, I removed a button of bone with the trephine from the skull one inch above the external auditory canal, and put my exploring needle into the brain in three different directions,—forward and inward, backward and inward, and downward and inward,—but failed to discover pus, although the abscess was there as the autopsy showed. The reason why it was not discovered at that time was because my needle was not larger than a No. 5 lachrymal probe, and that it probably became filled with brain substance in inserting it, and consequently the pus was not drawn out with the syringe; although there isn't a doubt but that the needle penetrated the pus cavity, as it could hardly fail to have done otherwise, as the entire temporo-sphenoidal lobe of the cerebrum was involved, and at the autopsy pus was found oozing out of the trephine opening in the skull over the right ear. The pus had evidently worked its way out through the sinus my needle made. Not discovering pus through the first opening, I determined to explore the cerebellum by making an opening with the trephine one inch and a quarter posterior to center of external auditory canal and one quarter of an inch below; this was done and needle inserted, but no pus.

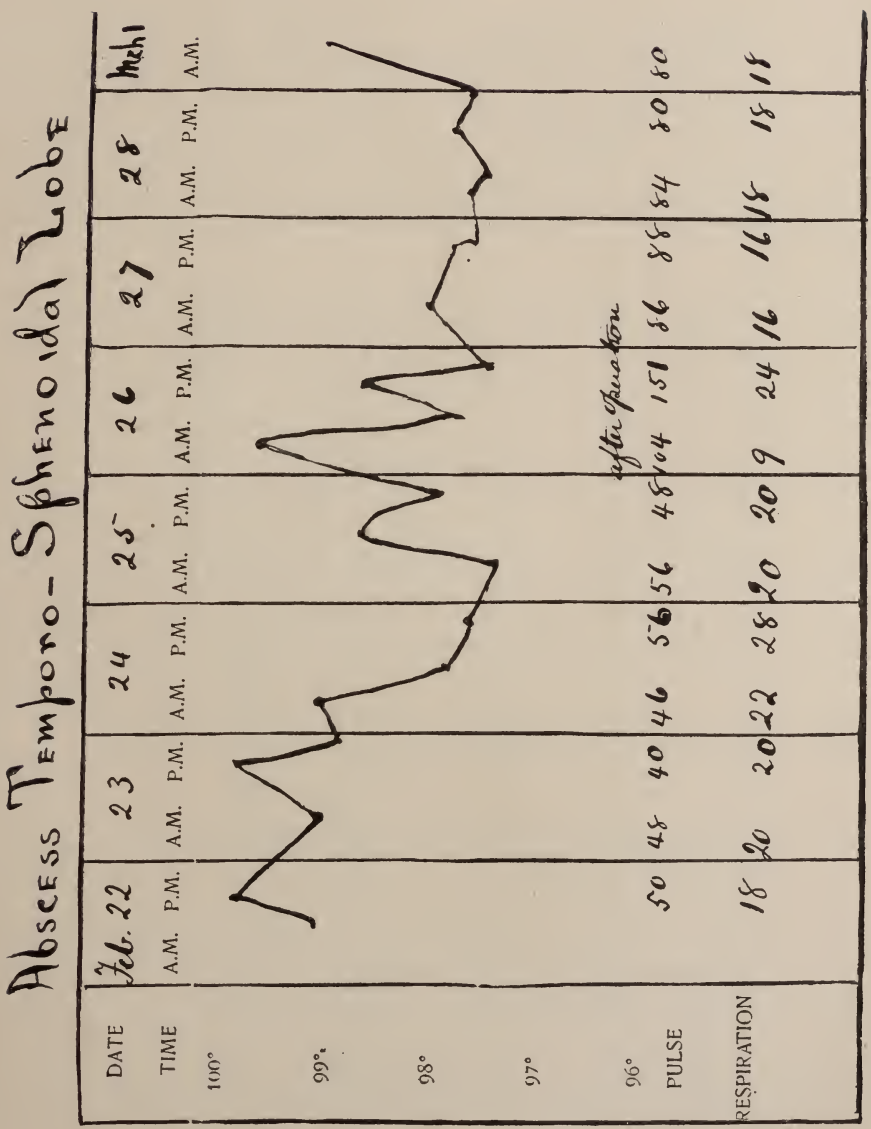
After sewing up the wounds, and dressing them aseptically, patient was put to bed. The only reaction shown after the operation was an improvement in the patient's condition ; mind was clearer, pulse better, and temperature went up to 99° ; had some retention of urine—this was probably due to the ether. So sure was I that I had an abscess of the brain to deal with, that I determined to open the left mastoid and trephine the skull over the left ear, which was done three days later with no result. This I did not hesitate to do, as I knew from the patient's symptoms that he would not live but a few days, unless relieved of the pressure upon the brain ; he died three hours after last operation. The autopsy showed that even evacuating of the pus would not have saved him, although it might have prolonged his life a few days.

PULSE TRACING TAKEN BY DR. CHAMBERLAIN, HOUSE PHYSICIAN.

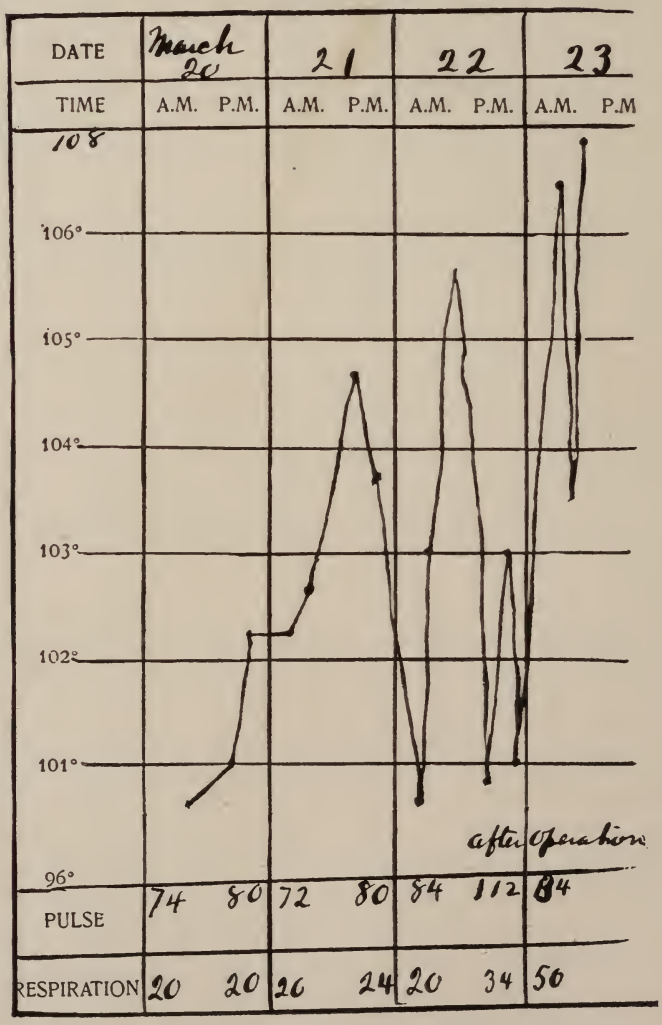
Louis Pasquale, February 23, 1899, 2.:05 P.M. Left radial pressure 1¾ oz. Troy. (Pressure usually applied is 2 oz. Troy). Vertical lines mark 5 seconds of time.

Autopsy : There was a marked congestion of the brain ; membranes were not adherent either to the skull or surface of the brain, with the exception that at the top of right side close to the longitudinal sinus the membranes were firmly adherent for about two inches ; marked venous congestion of the entire brain. Before removing the brain, pus was found oozing from the sphenotemporal lobe through the trephine opening over right ear. On opening the brain with a knife it showed this entire lobe to be a pus cavity, containing two or three ounces of a thick greenish pus ; it had not broken through into the lateral sinus, although the brain substance was very soft and friable. The point of outlet of the pus corresponded to the seat of my puncture at the time of the first operation. The rest of the brain was normal.

On removing the portion of the dura directly below the lateral sinus, a small area of thick cicatricial tissue was found covering an irregular opening in the posterior wall of the mastoid antrum of the right side, showing that there had been at some time a chronic inflammation of the middle ear, but not of very recent date ; and that was the point of infection of the brain. The


Abscess Temporo-Sphenoidal Lobe
DATE
TIME
100°
99°
98°
97°
96°
PULSE
RESPIRATION
Feb. 22
23
24
25
26
27
28
March
A.M.
P.M.
after operation
50 48 40 46 56 56 48 104 151 86 88 84 80 80
18 20 20 22 28 20 20 9 24 16 16 18 18 18

Subdural Abscess of the Brain



probabilities are that commencement of this abscess dates back a year or two, probably longer.

On the surface of left frontal lobe was a large clot of blood, which was caused by my puncturing one of the vessels of the brain with my sharp-pointed trochar. From experience gained in this case, I would advise the use of a blunt grooved director in entering the brain. By this means you will not rupture a vessel, and the opening made will be sufficiently large to allow exit of any pus present.

HISTORY OF CASE OF DIFFUSE SUBDURAL ABSCESS DUE TO A CHRONIC INFLAMMATION OF THE EAR.

Patient admitted to Metropolitan Hospital, B. I., March 19, to be treated for alcoholism ; complains of purulent discharge from left ear, which he had had for twenty years. For last few days had suffered from considerable pain in his ear and through the head, especially over left ear and frontal region. This was accompanied by some vertigo. On arising on the morning of the day after being admitted, March 20, he had an attack of dizziness which caused him to fall to the floor. Mental condition rather confused ; temperature that day ran from 100.6° to 102.4° ; pulse 74 to 80 ; respiration 20 to 22. March 21 patient passed a very restless night ; considerable pain in head ; vomited a thin yellowish fluid ; vertigo on sitting up. He is gradually lapsing into a comatose condition. Has developed a paralysis of right arm and legs ; no other paralysis present ; temperature running from 102.4° to 104.6° and then to 103.6°. March 22, at 9.20 A. M., was taken with a slight convulsive chill, which became general ; during the chill only the left side shook, the right remaining motionless. Pulse became rapid and weak, running up from 84 to 120. Temperature running from 100.4° at 2 A. M. to 105.6° at 10 A. M ; at 2 P. M. went down to 100.6°, this was just before operation ; after operation, 6 P. M., temperature was 103°, and at 10 P. M. 101°. Pulse was rapid and weak. Before operation, 88 ; after, 112, 88, 114, 113.

On the afternoon of this day, March 22, I saw the patient for the first time, and found the condition above described ; he was unconscious. Examined eyes with ophthalmoscope ; right fundus oculi normal ; in left eye found optic nerve very pale, arteries and veins diminished in size, and a distinct pulsation of the cen-

tral vein as it dipped into the center of the nerve ; this condition indicated pressure on the nerve in front of chiasma. Examination of left ear showed a thick, dirty-brown discharge, membrana tympani gone, ear sensitive at the bottom of canal, no swelling or pain over mastoid. On the totality of symptoms I made a diagnosis of abscess of brain with complications, as I felt it was a mixed case. Patient was prepared for immediate operation and brought into operation room at 3 P. M. First made the ordinary mastoid operation (Schwartze's), although I did not expect to find any pus there, as there were no symptoms pointing to it, although it is sometimes found without the usual accompanying pain and swelling. Instead of finding pus, I found just the opposite—that is, an almost complete obliteration of the mastoid antrum due to a hyperostosis, showing that at some previous time there had been an inflammatory condition of the mastoid. During the operation I exposed the lateral sinus, which felt perfectly normal to touch with the probe, showing that it was not filled with a thrombus. Leaving the mastoid I carried my incision further up, and with the trephine removed a button of bone from the skull, about one inch above and half-inch posterior to center of auditory canal. As soon as dura mater was exposed I placed my finger on it and felt a very strong pulsation which was synchronous with the pulse beat. As soon as I made an incision through the membranes, large quantities of a whitish pus mixed with a serous fluid came out in waves of pulsations ; along with it came some black blood, which made me rather doubtful in my prognosis, as I knew that it could only come from some ruptured vessels, which was confirmed by the autopsy. After allowing all the pus to escape, I irrigated as much of the brain surface as possible by a stream of warm, sterilized water, and after packing in some iodoform gauze, the wound was partially closed, allowing plenty of room for free drainage.

At 5 P. M. patient was taken out of the operating room to his bed. At 6 P. M. respiration easy and regular, but rapid, 34 per minute. Temperature 103°, pulse 112, full and strong. Lies in an unconscious condition ; restless. Patient continued same until midnight, when he was taken with a violent chill, followed by temperature 106°. Stimulants and strychine given, and under which he rallied somewhat ; but at 4.30 A. M. had another sinking spell ; pulse became weak and rapid, and respiration shallow, 50

per minute ; temperature 103.6°, pulse 114. At 9 A. M. he died, with a temperature 108°, pulse 134, respiration 48. Autopsy showed some pus remaining on surface of brain under the dura mater. On top of left superior parietal lobe was a black clot, evidently of recent origin, and in cutting open the brain at this point a large hemorrhagic clot was found in its substance. It was about the size of a horse chestnut. This was in all probability the cause of paralysis and death, it being in that part of the brain where the motor areas are. Intense venous congestion throughout and marked capillary congestion, especially of left occipital lobe. On the under surface of the left occipital lobe is a dark discoloration, but on cutting into revealed nothing abnormal. In the roof of the tympanic cavity a perforation was found, due to caries of bone ; this undoubtedly being the point of infection, causing a septic meningitis, resulting in a subdural abscess.

ACUTE OTITIS MEDIA AND ITS SURGICAL TREATMENT.

BY GRANT SELFRIDGE, M. D., SAN FRANCISCO.

THE subject of acute inflammation of the middle ear has been called so forcibly to my mind within the past few months, by a case which will be reported later on this evening, that I am prompted to present a paper dealing mainly with its surgical treatment.

The importance of early surgical interference has been entirely overlooked by most general practitioners of medicine as well as the laity, and little or no regard has been paid to the grave dangers that frequently appear during the early, as well as the late, stage of the disease. In fact, aurists throughout the civilized world know too well the story of the neglected "earache"; its being a necessity to early childhood and a matter of no consequence, until the patient is found on the operating table suffering with mastoid disease, otitic brain disease, or until the *post-mortem* has shown the same condition.

It shall be my endeavor in the course of this paper to impress on the members of this society, the importance of early surgical treatment in acute inflammatory conditions, especially of the attic space, and to show that every hour of delay beyond twelve hours, where there is a steady increasing of pain, is one of danger to the life of the patient, as well as to the integrity of the conducting apparatus of the organ of hearing.

From the researches of Blake of Boston and others we find that the middle ear cavity is not single, as formerly

taught, but double. One, the tympanic cavity proper, is situated below the horizontal plane drawn through the short process of the malleus. The other cavity is situated above this line, and is called the attic or cupola space.

The true tympanic cavity, according to Dench (*Journal Am. Med. Assn.*, March 19, 1898), has only a small amount of connective tissue, thus almost precluding suppurative inflammation, while inflammation in the attic space "invariably leads to connective tissue necrosis and the formation of pus."

The upper wall of the attic is separated from the middle cranial fossa by a thin plate of bone, and we find the "Sutura-petroso-squamosa" passing through it. Backward, the attic is connected with the mastoid antrum by a small channel called the "aditus ad antrum." In children the squamose suture is not ossified, so we find according to Jack (*Boston Medical and Surgical Journal*, August 19, 1897) that "the connective tissue covering of which, has an intimate relation with the dura mater." This relation explains the cases of meningeal irritation, symptoms varying "from slight twitching, to a condition practically of opisthotonos and to marked retraction of the legs like that seen in acute abdominal affections" (Jack, *Ibid.*).

Therefore we can look upon an inflammation within this space as one of great danger, especially so in children, for neglected cases sooner or later almost invariably lead to mastoid disease or diseases within the cranial cavity. It may be said here that in most acute cases there is mastoid involvement, either by extension of the inflammation by continuity of structure, or by the infective material gravitating backward whenever the patient assumes the recumbent position.

From this anatomical division of the middle ear we find two kinds of inflammation: one, acute catarrhal otitis, affecting the atrium or lower division; and the other, purulent otitis, involving the attic space. The former in children may be due to the effects of a rhinitis, as a sequel to acute inflammation of the pharyngeal or third tonsil, or it

may result from chilling the surface of the body, or from the use of a nasal douche.

Purulent otitis media usually follows the introduction of infective organisms during the course of scarlet fever, measles, influenza, diphtheria, operations for the removal of adenoids, etc.

In adults the symptoms of catarrhal inflammation in the early stage are defective hearing, a sensation as though one were talking into a barrel, and a sense of fullness in the ear. Pain is usually insignificant, but as the secretion increases the pain becomes intense, especially at night. At this point the drum ruptures or "the disease having run its course leaves within the tympanic cavity a collection of sero-mucus, with evidence of intro-tympanic effusion" (Dench).

In children the conditions are more violent, and run a much more rapid course. The temperature is high, and owing to a less resistant drum membrane, perforation takes place, and our diagnosis may be made before we are aware of the condition existing. Otoscopic examination reveals a general reddening of the drum membrane proper, although the pars vibrans may partake of the general redness. After spontaneous or artificial perforation the catarrahal condition may become purulent, and when it does the infection takes place through the external canal, from infective germs present in the canal, or the infection is introduced through the medium of non-sterilized cotton probes, or from non-sterilzed ear specula and from the use of dirty syringes carrying infected solutions.

In purulent inflammation of the attic the symptoms are ushered in with extremely severe earache, high temperature (102-105), loss of appetite, headache, prostration, etc. In children more severe constitutional symptoms may appear. During the first few hours, if an otoscopic examination is made, the drum proper presents its usual pearly color, but Shrapnell's membrane or the pars vibrans is intensely red. If surgical relief is not given at this stage the inflammation increases, exudation takes place within the

cavity, and the membrane bulges downward until it may simulate an aural polyp and completely hide the drum proper. Should incision still be delayed, spontaneous rupture occurs, and we have overdischarge which at first is serous or sero-purulent with the purulent stage quickly following. As the inflammation subsides the membrane retracts to its original position, and we have a perforation which, as Tansley says (Transactions of the Am. Otogical Society, 1895), "can never be induced to heal or close."

In the treatment of both these conditions it has been my rule for quite a period of time to immediately make a free incision into that part of the drum membrane which shows the most bulging. The incision is not a simple puncture, but a good free opening, from ¼ inch to more, depending on the size of the drum; and the knife is passed in until bone is touched, and then the knife is carried upward so as to thoroughly divide the folds of mucous membrane.

In acute attic disease I make a free, deep incision, and in withdrawing the knife I incise the superior wall of the external canal for at least half an inch, thereby gaining quite free bleeding, with usually rapid relief of pain as well as depletion of the engorged blood vessels. This is especially true if the case can be seen before there is much drooping of the membrane.

Acute attic disease is not a condition for temporizing with the hope of effecting a cure by the use of internal medication, but requires immediate action.

Before incision I carefully cleanse the external canal with a bichloride solution 1–5000, first sterlizing my syringe tip. After the canal is as clean as it is possible to make it, I mop the ear with an alcoholic solution of bichloride 1–3000 in about 50 per cent. alcohol. Then I mop the ear thoroughly with sterilized cotton probes, through a sterilized ear speculum, and instill a sterilized 20 per cent. solution of cocaine, if the patient is an adult and can stand it; otherwise an anæsthetic is given. With children an anæsthetic is always to be preferred, for they are more easily handled, and the incision can be made and made just

where it is wanted. After the sterilization of the ear the cut is made with a sterilized knife and the ear is either irrigated with a sterile solution of boric acid or immediately closed with a plug of cotton, also previously sterilized.

In connection with this plan of treatment for acute inflammations of the ear, I beg to submit the following three cases, all three of which presented mastoid involvments.

Case I.—Mrs. C. Age thirty-two, with the following history: About four years ago, while living in Texas, had her first earache. She had periodical pain lasting two or three weeks, and was obliged to remain in bed during that time. There was no discharge at this time. The second attack occurred in the summer of 1898. She had a severe cold at the time, and says the earache appeared at the time the cold was noticed. No discharge followed, but the pain continued off and on until four days before Christmas. The pain seemed to moderate, and instructions were left by the attending physician, who was obliged to leave the city, to call me if the pain again became severe. I was called Christmas afternoon, found the patient rolling about in agony from the intensity of the pain, with a temperature of $103\frac{1}{2}$. On inspection I found Shrapnell's membrane greatly bulged and immediately cleansed and incised the drum. There was a free discharge of serum, which about the second day became purulent. By the 29th the temperature had fallen to 99 and a fraction and the discharge had ceased. Thinking there might be still some retention of pus, I incised the drum the second time, but none appeared. During this time the mastoid was tender on deep pressure, but not markedly so. From that date to February 4 the daily temperature reached 99 to $99\frac{1}{5}$. There were occasional daily twinges of pain in the ear and a deep-seated, uncomfortable feeling in the mastoid. On February 4 I was called to see the patient before the close of office hours, and found the Shrapnell membrane very much reddened. The canal was cleansed and immediately incised, the cut being carried well forward along the superior wall. Fully a tablespoonful of blood followed. The ear was then plugged with cotton. The next day the Suter ice coil was applied and ice water circulated through it for forty-eight hours. At the end of that time the coil was removed for

twenty-four hours to see if the mastoid symptoms would reappear. Again the coil was applied for twelve hours, and then removed for good. At the present writing the patient is free from pain, soreness of the bone and temperature. Just how soon a recurrence will take place I am unable to say, for in cases of sclerosis of the mastoid, of which this is a type, one cannot say when the congestion of the bone will return.

Case II.—Carrie M. Age seven years, was first seen by me January 16, 1899, at the request of the family physician, Dr. Jno. Ward. The doctor had first seen the child the day before, and found her with high temperature, suffering great pain in the ear and particularly in the mastoid.

From the family I have obtained the following history: Two years ago she had her first earache, located in the right ear, lasting two days, always at night and of from 1 to 3 hours' duration. The next attack occurred the following July, and lasted only a short time. These attacks have recurred about every three months. Following the attacks which have occurred during the past year, the child complained of a soreness in the mastoid, particularly when her hair was dressed. No discharge could be detected after either of the various attacks.

Examination of the ear showed the membrane obscured by dried secretion. This was removed, and I detected what seemed like a perforation in Shrapnell's membrane blocked up with a plug of dried secretion. The canal was cleansed in the usual way and the drum incised under cocaine anæsthesia. No discharge followed this until the next day, when a little was removed with the cotton swab. The ice coil was applied the night of the 16th, and continued until the morning of the 18th. On the 17th I again incised the drum, hoping to find more pus, but was unsuccessful. On the evening of the 17th the temperature was declining, but the soreness still persisted. I then advised removing her to the sanitorium the next day to be prepared for operation, which was done, and the operation performed the morning of the 19th.

Of the mastoid operation I will only say that the cells were found full of pus and granulation tissue from apex to base, the entire process being removed.

A bacteriological examination disclosed a pure culture of the staphylococcus aureus. The temperature chart will show you

the daily variation. This variation was, I think, due to infection of the soft tissues near the mastoid tip and a resulting slough. The child is to-day well and free from her pain.

This case is reported to show the importance of the early diagnosis of the seat of trouble. Had this been done the child might have been saved an operation.

Case III.—Frank Ryan, age seventeen years, was referred to me by Dr. Potter, February 21. The boy had an earache the night previous, and on seeing the doctor the next day showed evidence of inflammatory action in the mastoid. Dr. Potter also found the drum bulging and reddened in the upper part and sent him immediately to my office. After cleansing and disinfecting the ear, the usual opening was made. Serous discharge followed. The ice coil was applied only one night, due to misunderstanding, and when the boy was again seen on the 24th, I found the bone very sensitive. The discharge at the time was purulent and quite profuse. I ordered him to the sanitorium for better care and applied the coil again, and kept it on continuously for 48 hours. It was then omitted for 24 hours and reapplied at the expiration of that time for three hours. March 2 found the boy with no discharge, no pain or sensitiveness in the bone. I thought from a slight bulging in the upper posterior part of the drum that there was some retained secretion, and immediately opened it. I could see a drop of pus follow the knife, and inflation with the Politzer had brought into view a small amount of pus. The coil was again applied for three hours and removed for good.

The only medicine used was merc. dulc. gr. $\frac{1}{10}$ every hour on Sunday, until free evacuation of the bowels took place.

It will be interesting, perhaps, to note that the boy's temperature was 103.6 at 6 P. M., the date of admission. At 5 P. M. of the second day the temperature was 99.8, the highest for the day. The third day it was 100.1; fourth day 99.6; fifth day 98.6. The remaining three days the temperature did not exceed the normal point.

While I am ready and willing to admit that cases do recover where there are instances of fluid in the drum cavity, I believe it is a sound and good rule to follow, to

open the drum cavity early, and do not be afraid to cut. Many lives have been sacrificed by delay and many cases of mastoid disease, sinus thrombosis, meningitis, and cerebral abscess are on record in ototogoical literature, where there never has been a perforation of the membrana tympani, nothing beyond the original earache, until the gravest of conditions were exhibited.

Hence I feel obliged to make a plea for an early surgical interference, and to lay it down as a rule. Don't fool with the ear unless you are able to use you ear speculum, and to distinguish the pars tensa from the pars vibrans.

NUX VOMICA IN EYE AFFECTIONS.

BY W. A. PHILLIPS, M. D., CLEVELAND, OHIO.

THE use of nux vomica in diseases of the eye is exceedingly limited. This arises in consequence of the fact that the great majority of affections of the eye are secondary—they develop because of errors of refraction, or because of constitutional diseases, such as syphilis and Bright's disease, and in certain troubles having their origin in the cerebrum or spinal cord, when the general treatment for the primary disease will usually be suitable for the eye symptoms as well. If the symptoms complained of by the patient are found upon careful examination to be due to imperfect refraction, and if this is capable of correction with lenses, as it usually is, it is well known that the subjective symptoms will as a rule disappear without further attention. It is to be observed, however, that sometimes a persistent irritability of the tissues of the eye, especially of the muscles, will remain after the adjustment of the lenses has been made to correct the cause of the eye symptoms. The most prominent of these symptoms to which nux is applicable consists of a sense of soreness and stiffness of the eyes in attempting to move them, and these symptoms nearly always have a morning aggravation before the muscles get limbered up. This state of the muscles is usually accompanied by a soreness of the eyeballs noticeable on slight pressure or motion of the eyes, and hence use of the eyes for reading and the like becomes quickly tiresome. In phlyctenular conjunctivitis, and more especially when the vesicles invade the cornea and the

symptoms appear to be aggravated by the condition of the digestive apparatus, nux will be often indicated. But from the nature of the relation between the eye and the stomach, the exhibition of nux here would for the most part seem to be mostly palliative, unless close observation, often repeated, should convince one that the irritation of the stomach or bowels is the real cause of the keratitis.

It has a valuable sphere of action in toxic amblyopia due to the excessive use of alcohol, or tobacco, or both, and may arrest the progress of atrophy in mild cases; but it cannot, of course, restore the integrity of the fibers already atrophic. When improved vision is obtained, it is through its action upon the fibers in a state of paresis, and in favoring the absorption of inflammatory products producing pressure, and, perhaps, too, by improving the condition of the stomach. In neuro-paralytic ulceration of the cornea, nux highly attenuated should, on the general principles of "provings," be a valuable remedy; but clinical observation is not as yet conclusive on this point. As regards marginal inflammation of the lids little is to be expected from the use of nux except through the influence which the digestion may seem to exert: for, here again, it is known that inflammation of the margins of the lids is due almost invariably to some error of refraction. Of course, no internal remedy can change the shape of the eyeball, which is commonly the cause of the error. Syphilitic affections of the eye exert their force principally upon the iris and the choroid, these being a continuation of one and the same structure, but symptoms may arise in the progress of this disease in which nux may prove of service as an intercurrent remedy; but as a curative agent, so far as curative agents go in this trouble, it is not conspicuous, and is probably of very little if any benefit. In inflammation of the optic nerve having its origin at the disc, nux is considered to be of considerable value. But in cases where the progress of the inflammation is rapid and the symptoms severe no known remedy can be confidently relied upon to arrest the disease. In inflammations of the nerve pro-

ceeding as a secondary affection produced by cerebral or spinal cord disease, symptomatology pure and simple will no doubt point to the indications that will limit the sphere of this remedy so far as the optic nerve is itself concerned. Marked pathological changes so promptly occur in all severe cases of inflammation of the nerve, whether primary or secondary, that its function becomes quickly and generally permanently lost in spite of nux or any other remedy.

In general it is to be said of nux as well as of all other internal remedies, that to rely, as a rule, upon symptomatology to the exclusion of the best-known measures for determining the *cause* and *pathology* of the case for the selection of the remedy, is greatly to endanger the integrity of the eye. There is a vast difference in treating a group of symptoms that develop idiopathically and which are not produced by recognized physical imperfections or pathological changes and those that are sustained, so far as we can see, by dynamic influences whose origin and importance are mainly in the apparent significance of the symptoms themselves.

SOMETHING NEW AURAL MASSAGE.

BY BENJ. S. STEPHENSON, M. D., LOWELL, MASS.

THE mechanism of the hearing apparatus is situated in such a position, and protected so carefully in its surroundings by nature, that in all cases of disease of its delicate parts we are badly handicapped in assisting nature to relieve.

The results of all inflammations, whether acute or chronic, are to leave thickened membranes, bands of inflammatory deposits, and anchylosed joints wherever they occur.

It is plain to all what the result must be when this occurs in a limited area like that of the middle ear and has to do with such a delicately adjusted mechanical apparatus as the ossicular chain, with its finely adjusted levers worked by delicate muscles. The first thing which is plainly apparent to us all is that in order to use this mechanism, instead of a light, almost imperceptible wave vibration we must have a slow distinct and forcible sound wave.

Again, as almost all inflammations of the middle ear proceed there from the throat, following the mucous membrane of the Eustachian tube, leaving in its wake a narrowed lumen, which, instead of maintaining a free supply of air at the same pressure as the atmosphere, allows a slow leakage from and little access to the middle ear, the natural result follows of a gradual and perhaps imperceptible retraction of the drum, as the natural tendency of all sound impacts is to drive the drum inward, and this having lost the elasticity which it had originally, cannot resume its normal position, and having lost nature's remedy it grows worse steadily.

Now, in the course of time this tube may regain almost its normal lumen, but the result remains the same. We now find our patients in a condition where inflation of the middle ear will release for a few minutes the impaction of the stapes and improve their hearing for the time being, or they will say, "Doctor, if I go where there is a great deal of noise, as in the cars, or in a factory, I can hear nicely. How do you account for that?" We have here a case whose general nerve perception is good, but there is nothing to conduct the sound waves to the nerve terminals, until they pass into a medium where there is sufficient exterior vibration to act on the bones, and set them in vibration, and then we find that the cranial bones will convey the finer vibrations of vocal sounds as well. Now that our patient is in this condition of helplessness, what can we do to relieve him or cure him? What has been done in the past? Has it been of benefit? What can we do or what are our aurists doing? We have records of operative interference from the beginning of the seventeenth century, first by incision of the membrana tympani, to allow sound waves to strike directly against the ossicles. This was done by Himly and Astley Cooper, but the results were so poor that they quickly discarded this method. Politzer speaks of using the galvano-cautery and inserting an eyelet in the opening for permanency, and advises it in cases of severe tinnitus and deafness, but says he has seen but little result from it.

A few years ago a wave of operative interference by our prominent aurists occurred in which they advised and did innumerable ossiculectomies, where they removed the membrana tympani, malleus, and incus, every case seemingly for a time for a time of deafness or tinnitus was thus operated on for a time, and a large fee thrown in. This quickly swept past as the results were after a short time more serious than good. Cleland in 1771 advised the sucking of air from the external canal for therapeutic purposes, but it was forgotten until Moos brought it forward as a means of treatment. Chas. Delstanche made the first

serviceable rarefacteur and that is still used by many, but this takes time, and can only be applied to one ear at a time, and becomes wearisome to the operator. Various air and sound masseurs have been made by different eminent aurists, as Garey's vibrometer, Houghton's and Gordon's masseur and Leach's sound and electrical masseur. Now the same end has been aimed at by each, but they have not recognized the fact, which can be easily proven, that each one will do a certain part toward recovery, but in order to obtain a complete result, not only must the membrana tympani be restored to its normal position, the ossicular arch released from its adhesions, and made to articulate freely, the morbid deposits removed from the middle ear, and the Eustachian tube made permeable, but the nerve, which, during the existence of the above conditions, has laid more or less dormant, must be aroused, and taught to regain its lost power of susceptibility to delicate sounds. Also the same routine cannot be applied to every case, as one needs more sound massage and less pneumatic, and the next will need just the opposite; and you have got to have a careful watch over each case and be able to adjust your treatment to what each one needs. Now no one process will do what I have enumerated above, but a combination of them all will do it, provided the nerve itself is not past all recovery. I will cite two cases to prove my theory.

First a Miss C., age fifty-two, has been through the whole gamut of deaf cures. Her condition when she presented herself was as follows: Hearing on the right side for watch *nil* by either air or mastoid condition. For fork at three inches when first struck lost after five seconds. Voice, a full slow tone at three feet if it was very quiet. The left side was no better. On inspection the meatus was dry and covered with dry scales, the drum was retracted, handle of malleus very prominent; no response to otoscope or to inflation of Eustachian; the left side presented a similar picture. The nares were clear and the pharynx showed signs of pre-existing catarrh. Her voice was very low, as she had not heard her speech for some time.

In this case I began with a sound massage of 180 beats per minute for fifteen minutes, followed by a pneumatic massage of suction two parts and sound 120 beats per minute. I followed this up for six weeks and then added direct suction of 120 strokes per minute. She followed up the treatment for five months, and at the end of treatment her voice was the ordinary pitch, as she could hear it. For the watch at five and six inches on right and left side, and she could hear and converse with people. This case came from Lawrence, and was treated three years ago, and from this case I can trace some twenty patients from that city who knew of her condition.

The second case of a Mr. P., also from Lawrence, age thirty-five; in the plumbing business; has been deaf for about seven years; thinks it followed la grippe. Hearing for the watch on right side two inches, also over mastoid, for fork at seven inches for ten seconds; on left side, watch three inches over mastoid, fork at seven inches for ten seconds. Voice at five feet when spoken to in a loud, slow tone.

Inspection showed drums thickened, boggy in appearance, slight movement with otoscope. Throat covered with tenacious mucus and vault of pharynx covered with follicles. Nares also showed a thickened membrane. In this case I treated the nose and throat with Dobel's sol. and had him do the same at home, paying particular attention to spraying the post nares via mouth. I then used sound massage, 240 beats per minute, for fifteen minutes, followed by sound and pneumatic massage 120 strokes per minute for ten minutes, suction three parts. This was followed by direct suction for five minutes. This was repeated three times a week for four weeks, at that time his hearing was ten inches for watch on either side, and the drum had lost the thick, boggy appearance and reacted well with otoscope. He kept up the treatment for three weeks longer, when he said his hearing was good enough and he stopped coming. He has since gone into the machinist business and is at present making the brass parts for the machine that helped him. I will say at this time that the machine can be used by any physician who has the electric current, and the strength of each part can be varied at will.

A CASE OF ORBITAL SARCOMA.

BY CHARLES DEADY, M. D.

ON April 28, 1898, Mr. H. D., æt. sixty-two, by occupation a grocer, was admitted to my clinic in the New York Ophthalmic Hospital.

He gave the following history: In the spring of 1895, after about five years of severe pain, considered by his family physician to be catarrhal headache, a swelling of about the size of a pea appeared between the left eye and the nose; this continued to increase in size, and in November of the same year the patient consulted an old-school oculist, who rendered the opinion that the swelling was an accumulation, either purulent or serous, from the ethmoid cells. He stated that the swelling was too high up to be associated with the lachrymal apparatus and believed that the long catarrh from which the patient had suffered had resulted in disease of the ethmoid cells and the consequent swelling. He advised systematic pressure to promote absorption if possible, ordered potass. iodide internally, suggested the need of nasal treatment, and referred him to a physician in his own town for that purpose.

In obedience to this recommendation, the patient placed himself under the care of the physician indicated. He gave the opinion that the swelling was caused by the obstruction of the natural channel, and that as a consequence of the retention of the secretions a rupture of tissue had occurred and a fold of tissue had formed a sac.

What channel he referred to can only be surmised, but from the nature of his treatment, which consisted of forcing a passage upward through the nose, the use of acids to destroy diseased tissue and the removal of decayed bone, it would seem that the infundibulum was the channel supposed to be implicated.

From the beginning of this treatment the discharge from the nose was very offensive, but after a time it became less so. By external pressure on the swelling the patient could cause a considerable discharge of pus from the nose several times a day, with the result of diminishing the size of the swelling very much, but it soon filled up again and resumed the usual appearance.

Two or three times while under this physician the swelling almost disappeared, but returned after over-exertion or what seemed to be a cold.

In the winter of '97–'98 the swelling became very hard and the pain intense. In April, 1898, the physician made an incision into it, liberating about two ounces of pus. The opening soon closed, and he then gave up the case. Another physician made a second incision, again affording temporary relief and at the same time advised the patient to see a surgeon and make arrangements for its removal by operation.

Status præsens—patient blond, slight build, some emaciation, face pale and has a washed-out appearance, general health much affected from pain and loss of sleep, and he feels very weak. Moderate elevation of temperature. On the left side the space between the eyeball and nose occupied by a large tumor, projecting forward fully an inch from the plane of the face ; so much so that the upper lid is tightly stretched over it, sufficiently so to interfere with its circulation. The eyeball is crowded downward and outward to an extreme degree, but the vision is good except as affected by the diplopia present.

The tumor is firm to the touch and can be reduced in size somewhat by pressure ; a flow of pus from the nose resulting.

Immediate operation was advised, and, the patient consenting, on the following day, April 29, after the usual aseptic toilet, he was placed upon the table.

An incision was made through the upper lid, parallel to and immediately below the orbital border, extending from the bridge of the nose outward over the protrusion for about two inches. The overlying tissue was carefully dissected from the tumor, which presented as a rounded, fleshy mass, beefy in appearance, and so firmly attached all around as to be exceedingly difficult to separate without injury to the adjacent parts, as the tissues surrounding the eyeball were on the nasal side closely adherent to it.

To facilitate matters the tumor was cut into and found to consist of very thick fleshy walls, with a pus cavity through the center, communicating externally with the point in the upper lid where the incisions had been made in the course of the treatment—that is to say, a little external to the center of the upper lid and close to the orbital border; and, internally, with a point on the nasal wall of the orbit near its superior border, and apparently just posterior to the situation of the pulley of the superior oblique muscle. In this spot an opening was formed in the nasal wall of the orbit which communicated with the frontal sinus of the opposite side, and through which the sinus could be freely explored with the probe. This sinus was apparently in good condition and the passage to the right naris was free from obstruction, as was evinced by the facility with which water was injected through it.

After some manipulation the entire mass was removed, when it appeared that the roof of the orbit had been pushed up by the tumor, so that the finger could be passed up behind the superior orbital border for about ¾ of an inch; the frontal bone appearing to be thinned here and the left frontal sinus absent, so that with the thumb on the external surface and the finger in the orbit the edge of the frontal bone could be grasped between the two and appeared to be a single layer of bone.

The measurements taken showed that the cavity resulting after the removal of the tumor was 2½ inches antero-posteriorly, 2¼ inches vertically at the base of the orbit, and 1½ inch from the nasal wall to the eyeball as it lay crowded to the outer side. Through the opening the motion of the tissues surrounding the eyeball could be freely observed as the eye was moved about. The orbit was washed out with electrozone and packed with sterile gauze; a bandage was applied, and the patient put to bed.

The temperature after the operation never went higher than 99⅗, soon became normal, and the patient began to improve in every way.

On the fourth day the wound was dressed and was found to be in good condition. The cleansing was performed by the use of sterile water, followed by electrozone, the orbit and the frontal sinus of the opposite side being thoroughly washed with the fluids.

At this time I was able to have a photograph of the patient taken, which had been my intention previous to the operation,

FIG. 1.

FIG. 2.

but which through some misunderstanding had not been done. The print marked Fig. 1 represents the appearance of the parts as they remained for the period during which the cavity was packed, which was about two or three weeks during which time the frontal sinus of the opposite side was being kept thoroughly clean. As soon as the conditions were sufficiently favorable the packing was discontinued, and after each cleansing the cavity was well dusted over with aristol, and simply covered with a pad, under which treatment it was rapidly reduced in size. Fig. 2, represents the patient at the present time ; the eye has practically resumed the normal position, the orbital opening has closed with the exception of one very small point just above and behind the orbital edge of the frontal bone, and the patient is in excellent health. The tumor was examined by Dr. E. S. Munson and was pronounced a round-celled sarcoma.

THE ELECTRIC TREATMENT OF EXOPHTHALMIC GOITRE.

BY DR. FELIX ALLARD.

EACH time that a new procedure has been proposed for the treatment of exophthalmic goitre, the same discussions have arisen regarding the respective merits of the electric and modern surgical treatment thereof.

The new operation proposed by Jaboulay of cutting the cervical sympathetic has brought up the present controversy, and MM. Abadie and R. Vigouroux have engaged in this debate in the *La France médicale*.* But the discussion pertains more to the pathology than the treatment itself, because they both agree regarding the latter, to reserve surgical intervention for cases that have resisted all medical treatment.

But, like Vigouroux, we consider the important point to know, is, when should we give up the medical treatment, or after what trials we may deem the electric treatment of no avail.

Paul Rauge † has entirely discarded the electric treatment of Basedow's disease.

"The electralization of the sympathetic," says he, "formerly played a large rôle in the treatment of exophthalmic goitre, when the affection was attributed to the paralysis of that nerve. But this expedient has no *raison d'être* now, in that it seems to be proven that the apparent phenomena do

* *France médicale*, 1898, No. 4, p. 61.

† Paul Rauge, *Le Traitement moderne du goitre exophtalmique* (*Bulletin médical*, 1898, No. 19, p. 213).

not indicate the weakening, but rather the permanent irritation of that nerve and its centers."

We will endeavor to show, after recapitulating the different methods of electralization that have been employed, that on the contrary, it is easy to reconcile the pathological theories now generally admitted, and corroborated by phenomena observed after section of the sympathetic, with the treatment by electricity judiciously chosen.

Electricity has not, as Paul Rauge seems to believe, only an anodal (invariably an exciting action upon the nerves); it is neither a medicine nor a medication, and it has different forms; it will bring forth absolutely different results.

If properly applied, the galvanic current can modify the anatomical elements of the nerve in such a manner as to considerably diminish or even destroy their excitability.

This surely was not the object the physicians had in view who first used the galvanic current for Basedow's disease. Although we have no exact knowledge of the intensity of the currents that they applied, because there were no means of measuring by milliamperes then, but certainly they must have been weak, not exceeding 8 or 10 milliamperes.

GALVANIC CURRENT.

Remack was the first to recognize the possibilities of the galvanic in this disease. And Van Dush was the first to apply it.

After Erb, Chvostok obtained the best results from it. Subsequently Leube, Guttmann, Benedict, and Eulenberg published interesting observations. Hammond, in his treatise on nervous diseases, also advocated the use of the galvanic current, and gives the technique of applying the same.

All these authors, following the accepted pathological theories, apply the treatment either to the growth and cervical portion of the spinal cord, or to the neck over the sympathetic or pneumogastric nerve.

For the electralization of the cervical spinal cord Erb recommends, first, the labile current--the positive pole be-

tween the scapula, and the negative over the nape of the neck; then the intermittent current, by moving the negative along the vertebral column.

The intensity should be weak and the duration of treatment not more than two (2) minutes. In order to act directly upon the bulb, he subsequently passes a very weak current obliquely and transversely through the head.

Physicians who have more recently used the galvanic current have applied it stronger to the sympathetic and pneumogastric; but, in my opinion, not yet sufficiently strong.

Hammond applied — pole to the nape of the neck with a dampened sponge, while the + pole was moved along the pneumogastric or the large cervical sympathetic. The intensity should be as strong as patient can endure, in daily applications of ten (10) minutes each.

Bartholm, in 1875, placed the — pole on the epigastrum, the + pole on the cervical region even with the pneumogastric and the sympathetic. He also recommended daily séances with all the intensity the patient can stand.

The treatment of the heart itself was inaugurated by Van Zunissen, who employed intense galvanic currents with the anode at the nape of the neck and the cathode over the precordial region.

Finally Erb uses the direct galvanism of the goitre itself, for which he recommends passing the current transversely through the thyroid body, using the negative pole with considerable intensity, but sitting of short duration.

Finally, for exophthalmic goitre he passes the current through the orbits from one temple to the other, or from the nape of the neck to the closed eyelids.

The physicians who at present use the galvanic current exclusively have made the operative technique more precise; but on the whole the procedure is about the same.

Sollier* applies the negative by a large electrode to the thyroid body and the pocket of vascular nerves in the neck;

* Sollier, *Un cas de maladie de Basedow rapidement améliore par la galvanisation*, Société française d'électrothérapie, 19 juillet, 1894.

first, the positive is placed on the nape of the neck, and then on the precordial region.

Use an intensity of 6 or 7 milliamperes, duration of ten minutes, repeated daily.

Deléage * applied the anode by means of a large metal electrode to the precordial region—the negative being placed alternately five minutes on the front and then five minutes on the back of the neck, on the level with the left pneumogastric. The intensity should vary from 3 to 10 milliamperes, according to the endurance of the patient.

The last two authors do not mention the electralization of the eyes.

Joffroy † recommends to treat the antero-lateral portion of the neck; it is necessary, he says, to electrify all the tissues surrounding the thyroid body. He places the + pole over the cervical vertebræ and moves the — pole over the anterior and lateral region of the neck, using as strong a current as the patient is able to bear. The rapidity of the improvement or cure is in proportion to the strength of current employed.

As time advances the more we notice the tendency of the several authors to use greater intensity of current, but on account of the defective technique in application, the intensity endured by the patient and which they consider the extreme is still insufficient. It seems to us difficult, operating as Joffroy directs, to exceed 10 or 15 milliamperes, while, with a steady current and an electrode properly constructed and applied, one can employ 30, 40, and even 50 milliamperes; beside, with such, the syncope may be less feared than with a labile current at an intensity of 10 to 15 milliamperes.

Yet, in the hands of Chvostok, Mon. Meyer, Van Zunissen, Chvrosteck, and Rockwell, this treatment has sometime been successful in modifying the tachycardia, diminish-

* Deléage, *Traitement du goitre exophtalmique par les courants continus*, (*Revue de thérapeutique et thermale*, 1892, No. 7, p. 99).

† Joffroy, *Nature et traitement du goitre exophtalmique* (*Progrés medical*, 1894, p. 64, 165, 217).

ing the sign of the goitre and ameliorating the general symptoms.

According to Erb the treatment is tedious, requiring 90 to 100 sittings, or even more. The exophthalmia seems to resist all treatment.

In France, since the work of R. Vigouroux * and the publication of his operative technique, the faradic current, approved by Charcot, and on account of his official authority established at the Saltpetrière, has been used almost exclusively.

Still, in the last few years, several of the electro-therapeutists have discarded faradization, giving preference to the galvanic current.

Larat † who had always obtained quite good results from faradization, tried the galvanic treatment at the instance of Professor Potain, and obtained excellent results.

More recently Deléage ‡ and Sollier § have communicated to the Société française d'électrothérapie clinical records of patients in whom the galvanic current gave almost immediate results.

L. B. Régnier ‖ at the Medical Congress at Bordeaux in 1895, also gives preference to the galvanic current, and relates the history of a patient much relieved by galvanization of the goitre and precordial region with an intensity of 8 or 10 milliampers.

Finally, in 1897, Crocq, Jr., ¶ exhibited to the Medical Society at Brussels a patient forty-two years æt., whose condition was unmistakably exophthalmic goitre, so perfect was the symptomatic picture thereof. From the third treatment a noticeable improvement took place; the palpitations almost entirely disappeared, the trembling existed no more, the sudden giving away of the legs did not occur, and the heart beat was eighty per minute and regular. After

* Vigouroux, *Progrès médical*, 1886.

† Larat, *Précis d'électrothérapie*, p. 235.

‡ Deléage, *Loc. cit.*

§ Sollier, *Loc. cit.*

‖ Régnier, *Journal de médicine de Bordeaux*, 8 septembre, 1895.

¶ Crocq fils, *Revue internationale d'électrothérapie*, 1896–97, p. 189.

fifteen applications of galvanism all the symptoms have disappeared, the exophthalmia became almost unnoticeable, the thyroid diminished considerably in volume; finally, the patient is cheerful, has energy for work, sleeps well, and considers herself cured.

Notwithstanding these encouraging results, it is certain that galvanism has often failed in the treatment of exophthalmic goitre. Unfortunately, failures are never reported, and therefore from the perusal of authors it appears that every mode of treatment brings nothing but success.

The cause of these failures is due, in our opinion, to a defective technique, that precludes the employment of high intensities.

Let us now examine into the considerations which ought to guide us in the methodical treatment of exophthalmic goitre, and let us see if it is possible to base a rational electric treatment upon the pathological theories generally admitted to-day.

Evidently it is the antero-lateral region of the neck that should be treated. According to Joffroy* the primary cause of Basedow's disease is a lesion of the thyroid gland, and his object in recommending the electralization of this region was to modify the thyroid tumor. But we do not wish to enter into a discussion of the pathological theories. It matters little if the irritation comes from the lower or upper portion or the surface of the gland. It is always largely sympathetic in its manner of propagating itself.

If, finally, the irritating cause manifests itself primarily in the nerve trunks or sympathetic centers, still it is always the nerve that should be acted upon.

And, in fact, the different procedures for the destruction of the cervical sympathetic—to wit, section, resection, breaking, stretching, etc.—show in a satisfactory manner that it is the conductors which should be treated. But it must not be forgotten that a surgical operation, however slight it may be, may produce in an invalid some grave

* *Annales d'électrobiologie*, tome i., 1898.

phenomena which may end fatally; statistics on this subject are plain. In the second place, according to Jabouley, who was the first to practice section of the cervical sympathetic in Basedow's disease, it was done to the degree of almost producing complete paralysis. He said: "The next time I operate on such an invalid, I would perform a simpler one, which would only modify the excitability of the nerve. I would stretch the nerve.*

Well now, is it not possible to modify the excitability of the nerve without an operation—by the action of an electric current alone? Assuredly, yes. The galvanic current applied with sufficient intensity, and with conditions adapted to the individual case, is capable of producing an effect analogous to the stretching of the nerve.

The success obtained in the treatment of trigeminal neuralgia extolled by Bergonie † shows to what a degree the galvanic current of high intensity is capable of modifying the excitability of a nerve. With such an intensity the current should act with an electrolytic action, the effect of which would reach the periphery as well as the trunk and ganglia of the sympathetic.

We should accomplish the following: But it is neither in the application alone of the — pole nor the employment of the small electrode, which is customarily used on the neck for electrifying the vagus or sympathetic, that we will be able to attain the proper intensity.

We operate in the following manner:

To the — pole we attach a tin electrode, 100 cm. square, covered with absorbent felt one cm. in thickness and extending a cm. beyond edges of metal. The electrode molds itself to the shape of the neck; if there are deep depressions fill them with absorbent cotton saturated with tepid water; the indifferent electrode, of at least 300 cm. square, is placed below the nape of the neck.

* Jabouley, *Presse médicale*, 12 février, 1898.

† Bergonie, *Traitement électrique palliative de la névralgie du trijumeau* (*Archiv. d'élect médicale*, 1897, p. 377).

By the aid of a liquid rheostat or current controller the intensity is gradually increased to 30, 40, or even 50 milliamperes, and continued five minutes.

With these precautions one is certain to avoid burning; furthermore, if the intensity is gradually increased and diminished and recrossed, the syncope, observed by Joffroy while using the labile currents recommended by him, is not to be feared.

The galvanic current, by its action on the thyroid gland, rapidly softens the gland and reduces the tumor even after the first few sittings, at the same time the other symptoms, *e. g.*, the trembling, tachycardia, and finally the exophthalmia, are relieved.

The last two symptoms resist the action of the current longer, similar as they do the section of the sympathetic.

The faradic current seems to act more energetically upon the tachycardia and exophthalmia.

THE FARADIC CURRENT.

R. Vigouroux recommends the faradic current exclusively. Although this method is probably understood by all electro-therapeutists to be as complete as possible we must give its minutiæ; because it is the minute observation of detail which is the essential condition of success in its administration. Since 1886 the technique advised by Vigouroux has only been modified slightly, which we will point out as we proceed.

The complete process of electralization designated under the name of carotidian faradization comprises:

1. Faradization of the carotid.
2. " " " thyroid gland.
3. " " " heart.
4. " " " eye.

For all these applications a flat electrode 7 or 8 centimeters square (the indifferent) is placed on the posterior-inferior portion of the neck, attached to the anode for electralization of the carotid, thyroid, and eyes, and to the

cathode for the heart. Always use a coil of medium-sized wire.

1. Faradization of the carotid.

The + or indifferent electrode being in place, a flat or olive-shaped electrode, attached to the pole, is applied over the sterno-mastoid muscle on a level with the angle of the jaw. It is best to press upon this until the arterial pulsations are appreciated by the hand. The current should be just strong enough to produce a slight contraction of the superficial muscle, causing a slight grimace of the face.

We would further recommend that the patient incline the head toward the side treated and that the current be not turned on till after the electrode is well in place, because without this precaution the contractions of the superficial muscles are apt to prevent the penetration and proper path of the current.

The duration of application should vary from one to one and a half minute for each carotid.

It is frequently observed on the side electralized that the skin is paler and marble-like, and the surface temperature a degree lower than normal.

2. Thyroidian faradization.

A flat electrode, 3 or 4 centimeters in diameter, attached to the — pole is first placed above the supra-sternal fossa over the most prominent portion of the tumor, and then on the sterno-hyoid and sterno-thyroid muscles, two or three minutes each location. The current should be strong enough to cause strong muscular contractions. You can cause these contractions without fear of gravity, pallor, or certain tendency to syncope. But it is necessary to avoid applying electrode to the sternum, where we always have bad effects.

3. Precordial Faradization. A flat electrode 4 centimeters in diameter, attached to the + pole, should be placed on the level of the third intercostal space near the sternum, over the point where the pulsation of the apex of the heart is felt.* The current should produce slight con-

* The third intercostal space is rather over the auriculo-ventricular junction than the apex.—EDITOR.

tractions of the pectoral muscles, and each sitting be of two or three minutes' duration.

4. Periocular Faradization. An olive-shaped electrode, attached to the — pole, is applied to the external border of the orbit on a level with the motor point of the orbicularis palpebrarum. In addition to this, we may slightly electralize the superior branch of the facial, then slide the electrode over the eyelids and the circumference of the orbit, avoiding the nerves on or below the orbit, especially a point one centimeter behind and below the end of the eyebrow, upon which point the electric excitation causes, in this class of cases, spasmodic twitching of the eyes. The application should not exceed two minutes for each eye.

Sittings should occur daily or every second day.

R. Vigouroux, in early contributions to the *Progrès médical*, emphatically protested against all the concomitant medication ; but in his later publications he is less exclusive, * and prescribes a general treatment directed to the general diathesis and thyroid intoxication. He at the same time always opposed the simultaneous employment of electricity and douches ; and he attributes to this certain unsuccessful cases which were brought to his notice by Abadie.

Under the influence of this treatment regularly applied the amelioration is generally prompt.

In the course of the last twelve years R. Vigouroux has published a long series of cases relieved or cured in this manner.

His pupils, Renault † and August Vigouroux ‡ claim the superiority of faradization over galvanization and cite in support of their theory numerous successes obtained by them in conforming in all points to the technique of their master.

Bordier ‖ in 1894 declares himself a believer in the

* R. Vigouroux, *Annales d'électrobiologie*, i., 15 mai, 1898 ; *France médicale*, 15 janvier, 1898.

† Renault, *Contribution à l'étude de la maladie de Basedow. Diagnostic et traitement par l'électricité*. Th. Paris, 1890.

‡ Aug. Vigouroux, *Gaz. hôpitaux*, 1 et 10 decembre, 1891.

‖ Bordier, *Arch. d'élect. médicale*, 1894, p. 418.

method of Vigouroux, and publishes two observations showing the undoubed efficacy of the treatment.

The general condition of the patient improves most rapidly, then they sleep better, the sensations of heat diminish, appetite improves, and finally the restlessness and nervousness disappear.

The tumors and goitre afterward are modified, particularly in the first ten or fifteen treatments; after this the condition is often stationary or the progress is very slow; the exophthalmia improves in time, but very exceptionally does it yield quickly.

The most difficult symptom to affect, but one on which it has unmistakable action, is the tachycardia.

Even if the amelioration at first is rapid, the complete cure takes a long time—six months or a year, or even longer.

The galvanic and faradic both have their strong advocates and several successes. Furthermore, according to Joffroy,* one may employ either one or the other method with equal success. We do not agree exactly with this, but believe in selecting the best portion of each method.

Following the example of Bordier,† we advocate the completion of the good effect of the galvanic of high intensity, of the neck, by the faradization of the orbicular palpebrarum, the carotid, and the precordial region—conforming in technique to the method of Vigouroux explained above.

The mixed treatment is applicable in the two principal clinical forms of Basedow's disease—the form both with and without the goitre. The regular daily application for a period of two or three months has always given us the best results—because the different methods, galvanic and faradic, seem to complete one another perfectly.

Two patients of our clinic who were sent to us by Dr. Brissaud and Dr. Lannois left us after two or three months' treatment, considering themselves cured.

* Joffroy, *Nature et traitement du goitre exophtalmique* (*Progrès médical*, 1894, p. 217).

† Bordier, *Précis d'électrothérapie*, Baillière, 1897, p. 498.

Another patient under the care of M. Brissaud at the St. Antonio Hospital has obtained the greatest amount of benefit from this mixed treatment.

We do not wish to unduly lengthen the consideration of the combined methods by personal observations; but we will concisely relate the history of a case especially interesting on account of the rapid diminution of the exophthalmia, usually the most obstinate symptom. In this case the eyelid, which at first with the greatest effort at closure left about a centimeter of the globe exposed—completely closed after twenty séances of the mixed electralization. The other symptoms are rapidly and markedly improving.

We do not pretend that this treatment is infallible and relapses impossible. Here, as in all medical intervention, even the most radical, they may relapse.

However, it may be supposed that the action of the galvanic current could penetrate almost to the sympathetic, where it joins with the trigeminal and pneumogastric. This explains the relapses noted after the section of the sympathetic ganglia of both sides.

ELECTROLYSIS.

Recently Vaudey * recommended and practiced electrolysis for the treatment of exophthalmic goitre.

The author advises to introduce the needles, attached to the positive pole, into the tumefied thyroid gland and proceed in similar manner to that used in vascular tumors.

His object is to produce glandular atrophy by ischæmia or obliteration of the blood vessels and consecutively forming contractile nodular tissue, which strangles the cellular elements—which latter in turn suppress the formation of the toxic secretions.

Two clinical cases are reported. The first patient, afflicted with an enormous vascular goitre, was given twenty-six sittings, from which the circumference of the neck was dimin-

* Vaudey, *Traitement du goitre exophtalmique par l'éctrolyse* (*Marseille-médical*, 1 avril, 1898).

ished nine centimeters and the Basedowian symptoms, which were slight, were entirely relieved. The second case is not as convincing--eight séances were given, with amelioration of the general symptoms, but not diminution of the circumference of the neck.

But is it possible to conclude that the diminution of the general symptoms following electrolysis goes to confirm the glandular theory or that of thyroidian intoxication?

The application of electrolysis is more difficult—it being painful, and local anæsthesia is not easily obtained—and it seems fraught with some danger. Finally, it is useful only in the form with goitrous enlargement.

In *résumé* of this entire study of this subject, we may conclude: 1st, That the mixed treatment is the best, *i. e.* (*a*) galvanization of the neck with high intensity; (*b*) carotid faradization; (*c*) precordial faradization; (*d*) periocular faradization. 2d, If the progress is not very rapid, or the consequent suffocation does not make an immediate operation necessary, the electric treatment should continue several consecutive months in all cases of exophthalmic goitre, either with or without thyroidian tumefaction.

SOME UNMANAGEABLE COMPLICATIONS OF SUPPURATIVE MIDDLE-EAR DISEASE.*

BY HUGH EDWARD JONES, M. R. C. S.

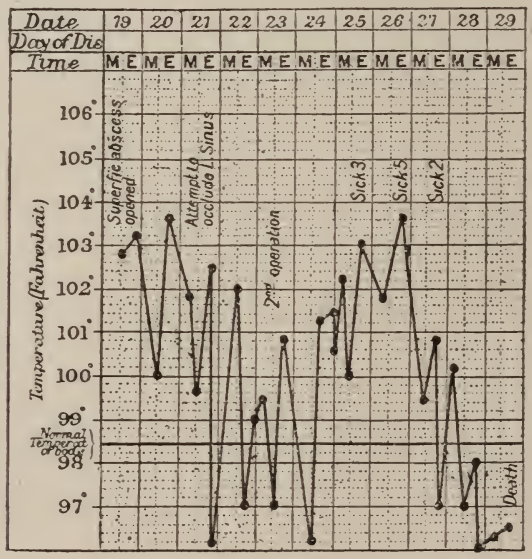
THE term "unmanageable" is used here in its relative sense only, and is not intended to deny that a successful result might have been obtained in some of the cases recorded in certain contingencies. The publication of successful operations to the exclusion of fatal cases, while so encouraging to the special surgeon, blunts the perception of the general body of the profession to the extreme gravity of suppuration in the middle ear. Though no new facts are needed to prove the existence of danger in this affection, the danger cannot be too often insisted upon, nor the means of avoiding and combating it discussed. These are the reasons which have led me to bring together the notes of seven fatal cases.

CASE I.—A girl, M. C., aged six years, had otorrhœa for nine months. Fourteen days before admission had vomiting, rigors, stiffness and swelling of neck and over mastoid. Was admitted into hospital on the day on which she was first seen, and the mastoid antrum and tympanum were thoroughly cleared out. On the third day the lateral sinus was exposed and a septic clot removed, and at the same operation the internal jugular vein was tied. Marked improvement, lasting four days, followed; then the symptoms recurred, and the patient died on the seventh day.

Post-mortem Examination.—We found patches of ulceration in the opposite lateral sinus. This patient would probably have been saved if she had been seen and operated on a week earlier. The case was reported at the Newcastle meeting.

* *British Medical Journal*, October 22, 1898.

Case II. June 19, 1897.—Boy, J. T., aged seven years. Otorrhœa followed scarlatina within a few months, and post-auricular abscess formed seven weeks before admission. This abscess had been incised 1½ inch behind the auricle, and a small discharging sinus existed at that point. When admitted, our then senior house-surgeon, Dr. Milroy, at once opened up the abscess freely. Alarming hemorrhage occurred from the mastoid vein, which



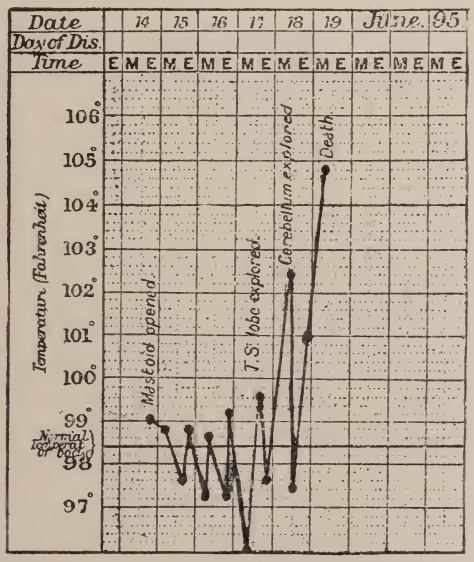
could only be stopped by plugging the foramen. The patient had the characteristic oscillating temperature of septic thrombosis, but rigors and vomiting were conspicuous by their absence until the last three days, when vomiting was frequent. Third day in hospital: Mastoid and lateral sinus opened up, the latter full of suppurating broken-down clot. The bleeding from the sinus and from a bunch of veins over the mastoid was so great that the wound had to be plugged up before the sinus could be thoroughly cleaned out. Fifth day a second attempt was made to clear out the sinus. This time I tried to control the hemorrhage by trephining over the sinus near the torcular, and pushing in the wall with gauze pledgets. Patient died on tenth day.

Post-mortem Examination.—Both lateral sinuses were full of suppurating broken-down clot, through which the fluid blood

permeated. About one inch from the torcular on the side away from the original lesion, the dura was in a sloughing condition, and in contact with this was one end of a large abscess, which extended through the occipital lobe to the anterior end of the temporo-sphenoidal lobe.

It is possible that if this case had been seen five or six weeks earlier the sinus mischief would not have occurred. When seen, the clot had broken down and allowed blood to pass through it.

Case III. June 14, 1895.—R. G., aged seventeen years. Otorrhœa off and on twelve months. Patient was confined to bed at home for two weeks with symptoms of inflammation of the brain. A slight improvement allowed his medical man (Dr. Parker of Ince) to send him to the hospital to have his ear examined. The



symptoms present were slow pulse (64), low temperature (97.6°), retracted abdomen, severe pain in ear and forehead, and giddiness without staggering. Right external meatus was full of granulations. No external sign of mastoid disease. First operation (day of admission); antrum and tympanum laid open. The cavities were full of offensive cheesy material. Inner wall

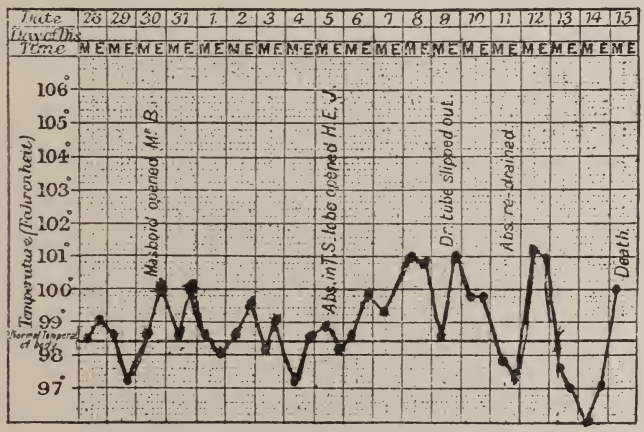
rough, tegmen carious and easily broken away, posterior wall and floor smooth and apparently healthy. During next three days there was no marked change. No localizing symptoms appeared. Intellect clear and quick. Exploration of temporo-sphenoidal lobe through roof of antrum gave a negative result. On the sixth day, in hospital, the following symptoms appeared: Temperature rose to 102°, pulse 120, left ptosis, conjugate deviation of eyes to left side, nystagmus; while lying on right side on right arm the patient swings his left arm over constantly, striking the bedside and locker with his closed fist. If anything, the grip of the right hand is stronger than the left, but both are good; the pain in the head and shouting had increased day by day. He had only been sick twice; urine was passed naturally; bowels had acted once; optic neuritis, and slowness of cerebration were absent. Third operation (sixth day). The dura was first exposed through the posterior wall of the cavity in the mastoid, and a probe passed between the dura and bone in the direction of the internal auditory meatus, but no pus was found there. A disc of bone was then removed from the occipital bone, just behind the posterior border of the mastoid and on a level with its lower half. A fair-sized hydrocele trocar was used for exploring, and this was introduced four times without pus being found. Death occurred next day.

Post-mortem Examination.—We found that an abscess which had embraced the middle peduncle of the cerebellum had burst on its median aspect, bathing the pons in pus. The inner wall of the cavity, toward the pons, was not more than one-sixteenth of an inch in thickness. The parts involved were the flocculus, the amygdala, and parts of the quadrate and biventral lobes. The outer half of the affected area was still in a semi-solid condition. Into this solid portion we could follow the track of the trocar. We were unable to demonstrate any direct connection of the abscess with mastoid or internal ear. There was no evidence of any other intracranial mischief.

It is not an easy matter in this case to determine the date of the formation of the abscess. Dr. Parker recognized the illness as a cerebral one a fortnight before he was able to transfer the patient to the hospital. On the other hand, the localizing symptoms of cerebellar abscess

did not appear until the day before his death. The abscess seems to have started near the median surface, and to have extended backwards and outwards. Did the abscess burst spontaneously, or did the thin inner wall give way when the trocar entered the semi-solid outer part of the abscess? With regard to the way of getting at the abscess, I feel sure now that the anterior part of the cerebellum can be best reached through petro-mastoid bone, and not through the occipital. The opening of the former proved to be at least an inch nearer the abscess than the trephine hole in the latter.

Case IV. October-November, 1895.—W. S., aged twenty-three years, had discharge from ears many years ago, but none lately till second week of present illness. He was ill in bed at home three weeks and in the hospital one week before he came under



the writer's care on November 5. A large superficial mastoid abscess (right), and some of the outer cells of the mastoid had been opened.

Symptoms.—Double optic neuritis. Pupils dilated, vision good, no squint, marked "slowness of cerebration"; occasional delirum, severe pain. Pulse rate had gradually risen from 70 to 90 and 100, and temperature from 97° to 100°.

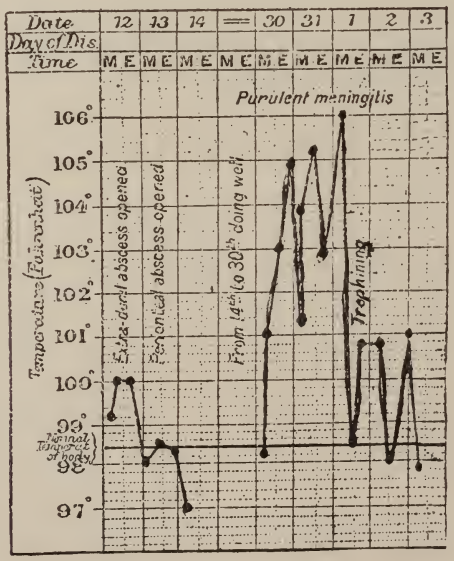
Operation.—After opening the antrum and removing the carious tegmen, the dura over it was found to be sloughing, and a probe

passed readily through it into a large abscess in the temporo-sphenoidal lobe. The opening was enlarged and the cavity gently washed out with boric acid solution. The probe could be passed directly upward 2½ inches without meeting any resistance. The patient died ten days after the brain abscess was opened.

Post-mortem Examination.—The abscess cavity was found to be without definite lining, and the brain around it was much softened.

The slight relief given by the operation, and the comparatively high pulse and temperature, had led us to fear that we had to deal with some associated meningitis or a rapid extension of the inflammation. The delay of three or four weeks between the onset and opening of the abscess was undoubtedly one cause of failure.

Case V.—R. H., aged twenty-two years. Influenza three months before admission, followed by acute suppurative otitis of left ear. Three weeks before admission there was pain and swelling behind the left ear, and a fortnight later a rigor and vomiting.

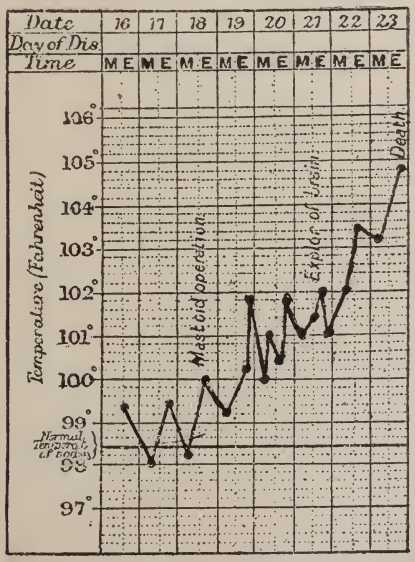


Admission, May 12, 1893.—Hard brawny swelling in upper part of posterior triangle of neck ; temperature 100.2° ; pulse 120 ; pupils dilated ; no optic neuritis ; membrana tympani hidden by swelling of posterior wall of meatus. Diagnosis ? Bezold's disease.

Operation on day of admission. Mastoid opened, sinus traced from cells into posterior fossa of skull. Extradural abscess evacuated. Large subperiosteal abscess in posterior triangle of neck opened. These abscesses communicated in some way not discovered at that period. Lotion passed from one to the other. Case did well from May 13 to 30, and patient began to get up; then suddenly severe facial neuralgia was followed by general symptoms of suppurative meningitis. Trephining and opening the dura in middle and posterior fossa failed to give relief.

Post-mortem Examination, June 3, 1893.—Purulent meningitis over parietal and frontal lobes and into Sylvian fissure and front part of base. Temporo-sphenoidal lobes free. T-shaped gutter formed by caries in posterior wall of petrous bone; one end of the crosspiece communicated with the mastoid cells, the other with the internal ear by way of the vestibular vein. The vertical portion passed down through the petro-occipital fissure beneath the sigmoid sinus into the periosteal abscess on the under surface of the occipital bone. From this a sinus burrowed amongst the deep cervical muscles to the front of the spine. The whole of the left parietal lobe of brain breaking down.

Case VI.—J. R., aged fifty-four years. Pain and deafness

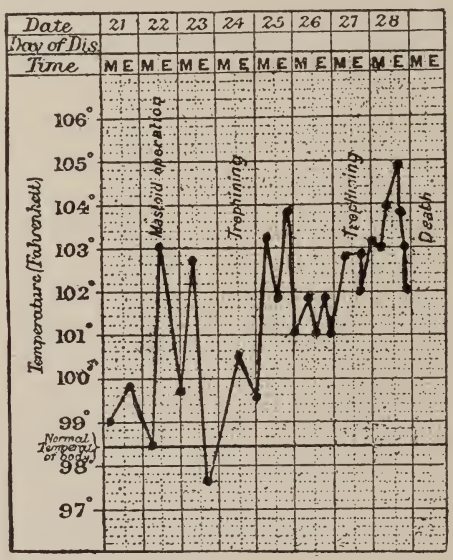


left ear five weeks, purulent discharge ten days; staggered and was giddy eight days ago, rambling in speech four days.

Admission, June 16, 1897.—Mastoid opened, 1 dram of pus escaped, whole mastoid found to be excavated; symptoms of acute suppurative meningitis. Trephining failed to give relief, and patient died June 23.

Post-mortem Examination.—Purulent meningitis of base.

CASE VII., August 21, 1897.—J. K., aged forty years. Ten days before admission shivering and tightness in chest, three days later pain in and behind left ear, which got worse and continued three days.



Admission, August 31.—Pain in left temple, winced when pressure applied over mastoid and below its apex. Pulse 78, respirations 44, temperature 98.4°. August 22. Mastoid opened, full of graulations and small quantities of pus; considerable relief. August 24. Pulse 63, temperature 97.8°, optic neuritis, cerebration perfect, dura explored, no extradural abscess found. August 25. More dull in intellect, walked without staggering. August 27. Will not speak, but understands what is said; cerebellum explored, large quantities of pus flowed from beneath dura (meningeal). August 28. Paralysis of right arm and leg. August 30. Died.

Post-mortem Examination.—Purulent meningitis, no brain abscess.

CONCLUSIONS.—CAUSES OF FAILURE.

1. None of these cases had received treatment by a specialist for the ear affection.

2. In most of the cases serious delays occurred before surgical treatment was sought. The first thrombosis case had an unopened mastoid abscess for two weeks before admission. The second one had an abscess seven weeks before admission. The temporo-sphenoidal case had been seriously ill for four weeks before he was seen by the writer. The caries of petrous case had swelling over mastoid and in neck three weeks before it was sent for operation. The suppurative meningitis cases were sent in as soon as the complication manifested itself, but evidence of very serious ear mischief had been present for some weeks; and I am bound to say that I think the mastoid complication could have been detected by a specialist.

3. *Extension of the Suppuration beyond the Limits of Successful Operative Treatment.*—Whether this was due to the rapidity of the process or to avoidable delays in applying proper treatment, it was the cause of failure in the thrombosis cases, in the temporo-sphenoidal case, and in the cases of purulent meningitis.

4. *Inaccessibility of the Fatal Lesion.*—This caused death in the cerebellar case either by actually bursting the abscess without providing an exit for the pus or by spontaneous bursting of the abscess after the operation. I venture to affirm that the only way in which the abscess could have been successfully opened was by operation along the posterior wall of the petrous bone. The occurrence of meningitis in the caries of petrous case would possibly have been prevented by a more extensive and thorough exposure of the diseased area. Once a general suppurative meningitis has been set up all operations fail.

The moral seems to me to be that the most important study of all in connection with this subject is the early detection of suppuration in the attic and antrum or internal ear, whether in chronic or acute suppurative otitis, and more especially in the latter, in which the mischief spreads with much greater rapidity.

TABLES SHOWING THE SIGNS OF "LATENT" SUPPURATION IN THE VARIOUS SINUSES OF THE NOSE, ILLUSTRATING DR. DUNDAS GRANT'S LECTURES ON THE DISEASES OF THE ACCESSORY SINUSES OF THE NOSE.*

THE tables here appended may be found useful to those who are engaged in the study or teaching of rhinology, and are founded mainly on the extremely lucid analysis of the subject as dealt with by Dr. Lermoyez in his work on the "Treatment of Diseases of the Nose," published in 1896, and reviewed by the present writer (*Journal of Laryngology*, vol. xii., p. 105). The extreme shortness of the headings adapts them for reproduction on charts for hanging on the wall, as used by the author to illustrate his lectures.

SIGNS OF PURULENT SINUSISTIS.

Presumptive :

(*a*) Unilateral pus.
(*b*) Pain relieved by evacuation.
(*c*) Subjective fetor.
(*d*) Polypi.

Probable :

(*a*) Pus at orifice influenced by attitude.
(*b*) Opacity on transillumination.

Certain :

(*a*) Irrigation.
(*b*) Puncture and aspiration.
(*c*) Puncture and irrigation.
(*d*) Puncture and transsufflation.

SITE OF SINUSAL SUPPURATION.

Pus in Middle Meatus :

Anterior group :
Antrum.
Anterior ethmoidal cells.
Frontal sinus.

Pus in Olfactory Slit :

Posterior group :
Sphenoidal sinus.
Posterior ethmoidal cell.

* Delivered at the Central London Throat and Ear Hospital on June 9, 16, 23, and 30, 1897.—*Jour. of Lar., Rhin., and Otol.*

ANTERIOR GROUP.

SIGNS OF SUPPURATION OF ANTRUM.

Presumptive :

(*a*) Unilateral cells.
(*b*) Intermittence.
(*c*) Infra-orbital pain.
(*d*) Subjective fetor.
(*e*) Upper molar caries.
(*f*) Pus in middle meatus.
(*g*) Mucous polypi.
(*h*) Lateral swelling.

Probable :

(*a*) Return on bending forwards.
(*b*) Opacity on transillumination.

Certain :

(*a*) Puncture and transsufflation.
(*b*) Puncture and irrigation.
(*c*) Puncture and aspiration.
  (1) Inferior meatus.
  (2) Alveolus.
  (3) Canine fossa.
  (4) Middle meatus.
(*d*) Catheterization, inflation, irrigation.

SIGNS OF SUPPURATION OF FRONTAL SINUSES.

Presumptive :

(*a*) Continuity of discharge.
(*b*) Seat of pain.
  (1) Spontaneous.
  (2) On pressure.

Probable :

(*a*) No return on bending forwards.
(*b*) Return after antral irrigation.
(*c*) Pus on tampon in hiatus.
(*d*) Transillumination.
  Antrum—negative.
  Frontal—positive.

Certain :

(*a*) Catheter.
  Inflation.
  Irrigation.
(*b*) Operation.

SIGNS OF SUPPURATION OF ANTERIOR ETHMOIDAL CELLS.

Presumptive :

Pus continuous.
Pain.
  Spontaneous supra-orbital.
  On pressing lachrymal bone.
Asthenopia.
Mental depression.

Probable :

Opacity on transillumination.
Lesions in middle meatus.
  Anterior rhinoscopy—pus, granulations.
Probing—pus, blood, bare bone.

Certain :

Puncture of bulla.
Elimination of antrum.
  (Exploratory irrigation.)

POSTERIOR GROUP.

SIGNS OF SUPPURATION OF SPHENOIDAL SINUS.

Presumptive :

(*a*) Pain.

(*b*) Ocular disturbance.

Probable :

Pus.

(*a*) Between septum and middle turbinal (anterior rhinoscopy).

(*b*) On superior and middle turbinals and vault (posterior rhinoscopy).

Lesions in olfactory slit.

(*a*) Bulging in depth (in acute cases).

(*b*) Mucous polypi.

Certain :

(*a*) Pus from ostium seen.

(*b*) Exploratory catheterization.

(*c*) Exploratory puncture.

SIGNS OF SUPPURATION OF POSTERIOR ETHMOIDAL CELLS.

Presumptive :

Same as sphenoidal.

Probable :

Polypoid middle turbinal.

Certain :

Return of pus after irrigation of sphenoid.

Bare bone behind middle turbinal.

ABSTRACTS FROM CURRENT LITERATURE.

Klaussner, Professor F. (München).—**Orthoform and Orthoform New.**—*Münchener medicinische Wochenschrift.*, No. 42, 1898. (*Jour. Lar., Rhin., and Otol.*)

The new orthoform resembles closely in clinical composition the old orthoform. It is uniformly fine, white in color, less cohesive and cheaper. It may be used in a 10 or 20 per cent. mixture with starch, etc. It has been recommended in laryngeal ulceration. It does not have the disadvantages of cocaine. The anæsthesia produced lasts eighteen to thirty-six hours. It is non-poisonous. Lichtwitz recommends orthoform in rhinorrhœa due to reflex irritation of the nasal mucous membrane, especially in hay-fever. Its anæsthetic action is useful in Schleich's infiltration anæsthesia, and as an injection combined with arsenic in inoperable malignant disease. (Insufflation of equal parts of orthoform, old form, with lycopodium powder was used with marked relief in several cases of hay-fever last summer by me. Extractor.)

PALMER.

Cooledge, F. S.—Adenoids as an Ætiological Factor in Orthopedic Deformities.—*Trans. of the Am. Orthopedic Assoc.*, vol. xi., 1898.

1. They may both be expressions of physical degeneracy ; but they occur together frequently enough to be considered such 2. Deformity may be direct result of the mechanical obstruction of the breathing. 3. Deformities come from tubercular joint disease, and the tubercular infection may come through the adenoids or tonsils. "Adenoids are unquestionably a frequent cause of tubercular glands of the neck." Adenoids may so lessen the physical resistance of the body that it succumbs to the tubercular infection. 4. Adenoids may cause reflex irritation of nerves, bringing about deformity, e. g., wry neck. 5. Adenoids may

cause such a lowering of general nervous vitality that typical orthopedic deformities may follow. He mentions six cases which he considers were in some way dependent upon adenoid hypertrophy—to wit: 1. Non-deforming club-foot on both sides. 2. Marked left dorsal-lateral curvature. 3. Tendonous contraction of both middle-fingers; and double flat foot. 4. Left dorso-lumbar lateral curvature and rotation. PALMER.

Braislin, Wm. C.—Ear Diseases Coexistent with Adenoids of the Naso-Pharynx—An Analysis of 110 Cases.—*Phila. Med. Jour.*, February 25, 1899.

The author gives the following summary of results of the examination of 110 cases of adenoids, almost all of which applied for the relief of ear symptoms.

Age at which Operation Was Performed.—The average age of the patient of the time of operation was 7 years and 3 months. The youngest was 7 months old; the eldest 16 years. The following table shows this more clearly:

Under 1 year of age	1
Age of 1 year and over	3
" 2 years "	6
" 3 " "	10
" 4 " "	4
" 5 " "	12
" 6 " "	15
" 7 " "	10
" 8 " "	10
" 9 " "	8
" 10 " "	14
" 11 " "	4
" 12 " "	1
" 13 " "	4
" 14 " "	3
" 15 " "	3
" 16 " "	2
Total	110

It is of interest to note that the largest number occured at the age of 6; the next largest at 10 years of age, the next at 5 years. Between and including the ages of 5 and 10 years a nearly equal number occurred at each age, and the number of cases in and including these six years was more than half the total number. Before 5 years of age there were 24 cases; after 10 years, 17.

The Ear-Complications.—The ear-diseases coexisting with adenoids in 110 cases were as follows:

Chronic catarrhal otitis media (non-suppurative)	50
Chronic suppurative otitis media	24
Recurrent suppurative otitis media	9
Otitis media sclerosa (results of suppuration)	4
Subacute catarrhal otitis media	3
Acute suppurative otitis media	11
Deaf-mutism	2
Eustachian catarrh	7
Mastoiditis, { acute, 5 / chronic, 2 }	7

Purulent and Serous Ear-discharges with Adenoids.—The large proportion of cases of adenoids into which suppuration of the middle ear enters as a complication charges the subject with grave importance. Figured merely as existing at the time of operation a little more than one-half the whole number presented this symptom, as is shown in the following table:

Chronic suppuration in	24	cases
Recurrent suppuration in	19	"
Sclerosis, a sequel to suppuration	4	"
Acute suppuration in	11	"
	58	

Among the cases of chronic suppuration there were one or more cases of necrosis of the ossicles, necrosis of the tympanic walls, necrosis of the wall of the external auditory canal, cholesteatoma, aural polypi and facial paralysis (one case).

In addition to the 58 cases in which suppuration was diagnosed at the time of consultation, there is a distinct possibility that a certain proportion of cases of chronic catarrhal otitis media likewise had suffered or would suffer from suppurative conditions.

Chronicity, a Characteristic of the Ear-diseases Accompanying Adenoids.—The chronic character of the ear-diseases complicating adenoids seems to me suggestive as bearing on a *continuing* ætiologic factor. Directly compared with acute conditions they stand as follows:

EAR-DISEASES.

Chronic.		Acute.	
Chronic catarrhal otitis media	30	Acute suppurative otitis media	11
Chronic suppurative otitis media	24	Mastoiditis	5
Recurrent suppurative otitis media	19		—
Sclerotic otitis media	4		16
Mastoiditis	2		
	—		
	89		

The great preponderance of chronic over acute cases of ear-diseases (about 6 to 1) leads one to search for a continuing degenerative influence as a cause for their chronicity.

Cases of pronounced adenoid enlargement in which absolutely no impairment of hearing or other ear-symptom is present, are rare, and even these cases should not be considered as free from threatened ear-disease while the lymphoid growths remain.

Mastoiditis with Adenoids.—In two cases symptoms of *chronic* mastoid disease coexisted with chronic suppuration, while in five others *acute* mastoid symptoms were present. These latter occurred previously to the adenoid operation, and none was the outcome of the operation itself. They are properly classed as sequels to, or complications of, the middle-ear inflammation; but the fact that they coexisted with adenoids makes them of interest and justifies their introduction at this place.

The two chronic cases and one of the acute cases of mastoiditis were relieved by the mastoid operation. The others yielded to free incision of the (Shrapnell's) membrane and to other measures.

Indications for Always Removing Adenoids.—It would appear that, as in nearly every case in which adenoids occur ear-disease is certain to follow, and as the best treatment is always preventive, no time should be lost in removing adenoids once they are diagnosed. If they return they should again be removed. The temporary inconvenience of the operation is very slight.

Temporary suppuration from the middle ear is likely to follow the adenoid operation in cases of recurrent middle-ear suppuration. It is best to inform the parents of this possibility. I regard it of great importance to continue treatment of the ear for a varying time after the removal of adenoids.

Conclusions:

(1) A great many of the ear-diseases of childhood depend for their ætiology on adenoids of the pharynx.

(2) The demonstration of the presence of adenoids should in every case lead to an investigation of the state of the ear.

(3) Ear-disease in some degree will almost invariably be found to accompany the adenoid growth.

(4) Treatment of the ear-disease should always be continued for a variable time after the removal of the adenoids.

(5) Removal of the growth checks to a great extent onward the

progress of the ear-disease, but the operation does not eliminate the requirement for subsequent treatment of the ears in suppuration, tubal obstruction, or other well-established pathological conditions.

(6) The presence of adenoids has a continuing degenerating influence on the ears, while under the influence of "colds" or attacks of acute contagious diseases of childhood, adenoids are prone to kindle active disorders. DEADY.

Beebe, A. G.—Iod. of Lime in Croup.—*Amer. Hom.*—March 1, 1899

In either membranous or spasmodic variety—during height of disease, for the dry, rasping, croupy cough, until it gives place to a loose, catarrhal cough. Give dose of one-fourth to one-half a grain crude drug every one hour; or if symptoms urgent, as frequent as every fifteen or thirty minutes for a few doses. The genuine drug is unstable, and should be prepared fresh for each case. The preparation sold by pharmacists is an impure iodide of lime. It may be prepared by saturating lime with iodine—is called Nichols' Iodide of Lime. It may be conveniently given mixed (not triturated) with sac lac or put into water. PALMER.

Finley, F. G.—Thrombosis of Cavernous Sinuses from Suppuration in Nasal Cavities.—*Montreal Med. Jour.*, November, 1898.

Patient, fifteen years æt. Complained of purulent nasal discharge, severe headache, weakness, and finally diarrhea. Admitted to hospital, temperature 101⅖; skin hot, dry; tongue moderately coated, gurgling in right iliac and left lumbar region of abdomen, but no tenderness, splenic tumor or rose spots; pulse 120, small and compressible. Subsequently had œdema of upper and lower lids of both eyes, double proptosis; conjunctiva œdematous, and subconjunctival hemorrhage on right side; eyeballs became immobile; left optic disc slightly swollen, its edges blurred and veins full. Rigors made their appearance, and before death temperature arose to 108° and delirium set in. Death occurred four days after admittance to hospital. This is followed by a very thorough necropsy. Pus was found around the right orbit and in center forehead, behind right eye. "In left frontal and orbital regions there is layer of lympho-pus extend-

ing from Sylvian fissure to the anterior extremity of lobe, the pia being matted." "Pocket of lympho-pus, size of thumb-nail, on left side of pons, the adjoining vein being plugged with thrombi." "At base of cerebellum a collection of pus beneath the arachnoid and covering the middle lobe." "Ventricles seem free, but on section at level of island of Reil some purulent infiltration is seen to extend along the deeper convolutions." "Grayish-red, soft clots in lateral sinus, non-adherent but speckled with whitish spots. In sella turcica, to the right of pituitary body, is an area of purulent infiltration, extending in the direction of cavernous sinus which is plugged." "The ethmoidal sinus is full of pus and bones on each side necrosed." Necrosis involves the wings of sphenoid. Left antrum full of pus and gelatinoid material. Tissues of both orbits show purulent infiltration around posterior half of globe. Autopsy showed no pathological condition elsewhere. In closing, two cases of thrombosis of the cavernous sinus due to infection from syphilitic ozena are mentioned.

PALMER.

Watson, Arthur N.—A New Method for Arrest of Nasal Hemorrhage.—*Univ. Med. Mag.*, Phila., December, 1898.

The two main blood supplies to the nasal fossa are: 1. the anterior, that portion anterior to the turbinals, and comes from the superior coronary artery, a branch of the facial. 2. The posterior—all portion of nares back of the above, and comes from the nasal or spheno-palatine artery, a branch of the superior-maxillary. This latter enters the nose through the spheno-palative canal, appearing in the back part of the superior meatus. Adopting the regular surgical practice of compression of artery to stop hemorrhage, the author plugs the *back part of the nares* and not the naso-pharynx as is customary—in the following manner:

Ligature passed through nose same as for plugging. Make pad of gauze about one one-half inch long, three-quarters of an inch wide, of about sixteen to twenty-four layers. Tie ligature in middle of this. Draw this back through mouth, up the naso-pharynx, and forward *into* the posterior portion of the nares.

In this manner, the opposite nostril is pervious for respiration, and there is no pressure on outlet of Eustachian tube, which may cause trouble in ear.

PALMER.

Powers, Geo. H.—Antitoxin in Ophthalmic Practice.

In the following case there seems to be sufficient evidence that the remedy effected the cure, although there is no way of ascertaining that diphtheria was actually present:

March 18, 1898, I was consulted by a patient from the country who had extensive granular conjunctivitis, vascular keratitis, and corneal ulcers in both eyes. She was anæmic and debilitated. Commencing with the usual treatment, local and general, I employed Knapp's forceps in expressing the contents of the granulations on the 22d; improvement in general condition continued till the 29th, when the upper lid of the left eye was markedly swollen, a thick pus exuded from the lids, and on everting the upper lid it was found stiff and covered with a diphtheritic-looking membrane; on the 30th the right eye was similarly affected and the left one worse; on the 31st, both corneæ showed signs of softening, and the situation was very alarming. As no such case had occurred in my practice for several years, I had not at first thought of the use of antitoxin, but as soon as the idea occurred to my mind I immediately obtained and injected in the thigh nearly 500 c.c. of Parke, Davis & Co.'s anti-diphtheritic serum, about 3 P. M. of the 31st of March. On the next morning the membrane and also the purulent secretion had disappeared and did not return, a happy result which I am sure can be safely credited to the antitoxin.

Unfortunately, the corneæ were so greatly affected already that a central leucoma resulted in each, and a small anterior synechia in the left eye. The trachoma was nearly cured (by the antitoxin or by the purulent inflammation?) and the opacities have gradually cleared away to a considerable degree. The patient was not conscious of exposure to diphtheria at any time or place, and had no constitutional symptoms. DEADY.

Massie, Prof. F. (Naples).—Concerning a Case of Laryngeal Lupus.—*Lar., Rhin., and Otol.*, February, 1899.

A girl nine years of age with a tubercular syphilodema of the pinnæ and upper lip was referred to author by an eminent syphilographer. Laryngoscopy revealed signs of considerable infiltration of the epiglottis and the other parts around the larynx; on account of previous diagnosis he diagnosed syphilis. After took

energetic syphilitic treatment for a year, when found the former condition remained stationary, and besides the arytenoids were involved, causing abduction and consequent hoarseness and latterly dyspnœa. Also signs of disease on uvula and faucial pillars. Bacterial examination evidenced no Koch's bacilli. Diagnosed *Lupus.* Treatment. Added local application of resorcin to others, and curetted infiltrated portions of epiglottis. The latter caused spasm of glottis which would have terminated fatally if had not intubated. Inoculations with curetted material were made without positive results. Histological examination confirmed the tubercular nature of the lesion.

From which he deduces following : " 1. The difficulty in making a differential diagnosis between lupus and syphilitic lesions in certain cases, both in the beginning and also when lesions of the skin are accompanied by those of the mucosæ. 2. The good results which intubation can render in stenosis of laryngeal lupus. 3. The valuable aids furnished by histological examination of removed tissue, especially when the bacteriological examination and inoculation of animals have given a negative result."

This is followed by a very thorough consideration of the similarity of lupus and tuberculosis, not only of the skin, but the larynx and other mucosæ ; taking into account the different forms of lupus ; mentions several cases of coexistence of lupus in the upper air passage with tuberculosis of the lungs, mesentery, or kidneys; the author concludes that lupus is merely another name for tuberculosis of the tissue involved, and therefore it would be beneficial to medical nomenclature to drop the term. He considers this dualism of terms in this advanced age "a gratuitous insult to pathology as well as logic—to pathology, which teaches that lupus in reality is cutaneous tuberculosis; to logic, which warns us against applying two distinct names to the same thing."

He remarks that some may call lupus vulgare an attenuated tuberculosis, while there is no apodictical proof that lupus erythematosa is of the same nature.—PALMER.

Gamble, Wm. E.—Voluntary Lateral Nystagmus.— *Journ. of the American Med. Assoc.*, March 4, '99.

A. D., age twenty-four, German-American, a medical student, has been a student and teacher all his life ; has not been sick since childhood ; had no severe illness during that period. He

did not have scarlet fever nor diphtheria, and has never had diseases of the eyes of any kind.

While attending high school at about the age of fifteen years, he first discovered that he could produce at will lateral nystagmus, and afterward often amused his classmates by his optical gymnastics. It was never involuntary. He has never experienced any difficulty in starting the eyes going, but can continue the movement less than a minute, as the muscles become exhausted. He cannot produce it in one eye alone. Nystagmus is most pronounced when fixing the eyes on an object six to eight feet distant, directly in front, but can continue at less rapidity when the eyes are making the lateral excursion. The movements are more pronounced by daylight than by artificial light. The rapidity of movement is as great as I have ever seen in cases of nystagmus. V. each eye=20/20.

He does not suffer from headache nor eye-strain by continued study. He is not subject to headache of any kind. He accepts R. E. Cyl. .50 D. axis 180=20/20+2. L. E. Sph. .25 D.=20/20 +1. There is no opacity of cornea nor other media. Field of vision is normal, color sense is normal, and fundi are normal in appearance. He has never had writer's palsy nor other manifestation of neurotic disease. He has never worked in mines nor lived in a mountainous country.

The case is unique on account of its great rarity. Dr. Noyes, however, in his "Diseases of the Eye," edition of 1890, says that he has seen but one case of voluntary nystagmus, the patient having acquired this movement after having been confined to his room for some weeks for eye tronble. This case of Dr. Noyes' is the only case I have seen reported. There is scarcely any literature upon the subject, and I have not yet seen any explanation offered accounting for the phenomenon. In this case there is no new movement acquired differing from the normal lateral movements of the eyes, save that there is greater rapidity of motion. Why this man possesses this rare faculty, while millions of his fellows do not, is a problem for speculation.

There is evidently no pathology here. There is no want of cortical innervation of extraocular muscles, rather a temporary increased amount of it. Opacities of the cornea or of other refractive media of eyes, when occurring in early childhood, may produce nystagmus proper, volition being the only cause in this case.

DEADY.

Kirkpatrick., E. A.—Binocular Glioma of the Retina. —*Wantime Med. News*, December, 1898.

The following is the history of a case of this rare form of disease :

A. T., age two years and one month, was brought to my office July 24, 1896.

The parents stated they had not detected any loss of vision in the child until a short time before this date, but I found the vision little better than perception of light.

There was not the slightest sign of irritation about the eyes, tension was normal and media clear.

An examination of the fundus of each eye revealed a degenerate condition of the retinæ. These coats appeared white, but were not bulging at the time.

I did not make a diagnosis of the exact nature of the disease at the time of this examination, and yet gave a very hopeless prognosis as far as vision was concerned.

I did not see the child for six weeks (September 5), when, the eyes becoming painful, parents sought advice again.

At a glance in the pupil of the right eye the pinkish-white neoplasm was seen occupying a large part of the posterior chamber, and in the left eye a similar growth was to be seen, though not so far advanced.

The disease was in its second stage, with increased tension and the eyes irritated and painful.

A consultation with the family physician Dr. Black and Dr. Tobin was held on September 8, and all agreed on the diagnosis.

As the disease was confined to the eyeball, we urged enucleation of both eyes. This proposition was not received with favor, and shortly after the child was taken to Boston, where an eminent oculist was consulted. Our diagnasis, prognosis, and treatment were confirmed.

The third and fourth stages rapidly followed, and the child died in the following March.

Fuchs of Vienna University states: "The course of the disease from its very outset to its fatal termination usually extends over several years," also "Glioma as a rule only attacks one eye."

In the case reported the course was very rapid and both eyes were affected.

The case, therefore, with both eyes simultaneously attacked and

running so rapid a course, is an uncommon one of an exceedingly rare affection. DEADY.

Avellis, G. (Frankfort-on-Main).—**Case of Not Quite Sudden Death from Enlargement (Vicarious) of the Thymus, the Spleen Being Rudimentary.**—*Archiv. für Laryngologie und Rhinologie*, Bd. VIII., Heft 1. (*J. of L., R., and O.*).

Boy, four years æt., very strong, exceptionally well nourished, and in apparently perfect health. "At 7 A. M. breakfasted heartily, and about 10 o'clock breathing suddenly became loud, groaning and stridulous, his face blue; and with slow, deep, and difficult inspirations he struggled for air.

"Author saw him shortly afterward. There was no diphtheritic exudation in the pharynx; the intercostal spaces were retracted; the patient bent himself backward during inspiration; the pulse was still perceptible. After about fifteen respirations he died. Death was unaccompanied by convulsions, and took place within two hours of onset of difficulty in breathing." A thorough *post-mortem* examination evidenced only "the thymus was enlarged and vascular. A smooth walled cavity, as large as a cherry, with gray, viscous, pus-like contents, was found in its substance. The spleen was rudimentary, dark blue, as large as the thumb-nail and from three to four mm. thick." He reminds us that there is some peculiar relation between the thymus and spleen; as the thymus atrophies the spleen enlarges. It is believed that the weight of the thymus corresponds rather with the state of nutrition than with the age of the child. PALMER.

Goodale, J. L.—A Case of Calculus of the Uvula.—*Bost. Med. and Surg. Jour.*, December 8, 1898.

Baby, colored, æt. two weeks. Obstruction to breathing and choking only symptoms; these and difficult nursing *only* when in recumbent position. "Inspection of oro-pharynx showed on the anterior aspect of the uvula, midway between the tip and juncture with the soft palate, a white globular mass about four millimeters in diameter, lying apparently immediately beneath the epithelium. The consistence of the mass, as shown by the probe forceps, was of bony hardness. It was readily enucleated by the cutting forceps." Consisted of amorphous particles, together with fat-

crystals, fat-drops, and fatty-degenerated epithelium. Author finds no other cases exactly similar, and only records of three calculi of the velum palati. In one case, that of a sixteen-year-old boy, were found two masses size of a hazel nut at each side of the base of the uvula.—Second case, a man had three concretions in his soft palate. As these were situated within the palatine glands, the mouths of which were enlarged, they were treated by inserting into these glands minute tampons saturated with dilute sulphuric acid. Cured.—Third case. The culculus was situated within a cul-de-sac between the muscular layers. It weighed fifty-four grains. PALMER.

Waggett, Ernest, M.D.—Varix or Nævus of the Posterior Faucial Pillar.—*Jour., Lar., Rhin., and Otol.*, February, 1899.

Case shown at the Laryngological Society of London. A knot of dilated veins were to be seen under the mucous membrane of the left posterior faucial pillar, connected above with a small nævoid patch occupying the surface of the upper part of the corresponding tonsil. It caused no symptoms of any account. PALMER.

Palmer, A. Worrall.—Aphonia, and Raucedo or Hoarseness.—*Hom. Eye, Ear, and Throat Journ.*, September, 1898.

Both are merely symptoms of some disease. Aphonia is the complete loss of musical note. Raucedo is the combination of an imperfect musical note made by faulty vibration of the vocal cords and whispering. Diseases of which they are symptoms may be classified according to locality, as those (a) in the larynx, (b) vicinity of larynx, or (c) at distance from such, or according to primary cause as (a) mechanical, (b) neurotic. The mechanical are (1) laryngitis catarrhalis; under this come chorditis tuberosa, and laryngitis folliculosa and granulosa; (2) laryngeal or tracheal ozena; (3) laryngitis œdematosa; (4) ulcerative diseases of the larynx; (4) chronic hyperæmia of the vocal cords. In the same category may be placed chorditis hemorrhagica and laryngitis hemorrhagica; (6) rheumatism; similar to this is gout; (7) chondrites or peri-chondrites; (8) dislocation of the arytenoid cartilage; (9) anchylosis of the crico-arytenoid articulation; (10)

cicatricial contraction in the larynx ; (11) benign or malignant growths of the larynx or immediate vicinity ; (12) intra-laryngeal mycosis ; (13) myxœdema. The neurotic causes are : (1) paralysis (total or partial); (2) spasmodic affections; (3) reflexes. There is given a concise description of the objective and subjective signs by which one of the above diseases may be diagnosed from another. PALMER.

Smith, Edgar D., M. D.—Five Rare Cases of Tuberculous Ulceration of the Soft Palate and Adjoining Soft Tissues.—*N. Y. Med. Jour.*, February 11, 1899.

All the patients merely complained of a common soreness of the throat. Examination presents, "when seen early, a congested appearance of the affected parts. This is followed by an unnatural paleness, which distinguishes it from the surrounding mucous surfaces. Following this came small seed-like, grayish-white nodules, of the size of a small pinhead. In a few days these break down and small ulcers appear, which in bad cases are very numerous. On the second or third day they coalesce into a grayish-white superficial ulcer. Unless checked in this stage, this increases rapidly at the edges, and the patient rapidly loses strength and flesh, dying from exhaustion in a short time. The exhaustion is out of proportion to the extent of the ulcer, and to me is not easily explained."

Clinical reports of the five cases follow, each presenting the majority of symptoms collated above. One case, which was complicated with pulmonary tuberculosis, died about ten days after a large ulceration, extending over the soft palate, the anterior and posterior pillars of the fauces, the tonsils, and the corresponding portions of the sides and posterior walls of the pharynx. The other uncomplicated cases all treated satisfactorily under a local application of equal parts of lactic acid and glycerin. Another case of complication of syphilitic and tuberculous ulceration of the larynx, which also died of exhaustion twelve days after the individual tubercles coalesced to form a single large ulceration. PALMER.

BOOK REVIEWS.

An American Text-Book of Diseases of the Eye, Ear, Nose, and Throat. Edited by G. E. De Schweinitz, A. M., M. D., Professor of Ophthalmology in the Jefferson Medical College, Philadelphia; Consulting Ophthalmologist to the Philadelphia Polyclinic; Ophthalmic Surgeon to the Philadelphia Hospital and to the Orthopedic Hospital and Infirmary for Nervous Diseases; and B. Alex. Randall, M. A., M. D., Ph. D., Clinical Professor of Diseases of the Eye in the University of Pa.; Professor of Diseases of the Eye in the Philadelphia Polyclinic; Ophthalmic and Aural Surgeon to the Methodist and Children's Hospitals, Philadelphia. Illustrated with 766 engravings, 59 of which are in colors. Philadelphia: W. B. Saunders, 925 Walnut Street, 1899. Pp. 1251.

This work is a real addition to the medical literature of the day, and one that will be equally useful to the student in the departments covered, and to the accomplished expert.

It is a most excellent example of the results obtainable by the collaboration of good men in all departments under intelligent and able editorship, with the additional recommendation that it is American from cover to cover, all the articles having been written by our own men and reflecting much credit on the authors. The list of collaborators is too long to reproduce in full, but the names of Piersol on Embryology, Anatomy, and Histology of the Eye; Dennett and Cutter on General Optical Principles, Katoptrics, Dioptrics, and Physiological Optics; Jackson on Refraction, Ophthalmometry, Ophthalmoscopy, Skiascopy, Optometry, and Mydriatics; Swan M. Burnett on the Cornea and Sclera; Casey A. Wood on Amblyopia and Amaurosis, Würdemann on the Visual Field; and Knapp, De Schweinitz, Hotz, and Ayres on Operations, are a sufficient guarantee that the department of ophthalmology is well cared for; while Holmes, Blake, Dench, and Buck on the Ear; and Harrison Allen, Myles, and

Sajous on the Nose and Throat, together with a number of other good men, fully maintain the standard in these branches.

Piersol's work on Embryology, Anatomy, and Histology of the Eye, is clear, concise, fully abreast of our present knowledge, and is an excellent presentation of the subject in a comparatively small space. Dennett and Cutter furnish material for *much* thought on the part of the student in their discussion of the mathematical principles of physiological optics. De Schweinitz's section on the Examination of the Eye, while short, contains a large fund of information very tersely expressed, and includes the latest methods of testing the various ocular functions.

Jackson, on the Anomalies of Refraction and the various instruments used in their detection, does as much justice to his subject as the very limited space allotted to him will allow, but we cannot agree with him in all of his statements; for instance, when he advises the full correction, of hyperopia. A long experience in such work has convinced us that in a large majority of these cases the disagreeable symptoms are caused, not by the hyperopia, but by an accompanying astigmatism, which may be exceedingly slight in degree, but the correction of which is an absolute necessity in the cases of at least all patients of a nervous temperament, and we have commonly found that with such correction, the addition of a spherical lens, *for the manifest hyperopia only*, is amply sufficient to afford comfort often for several years, to patients under thirty-five. We deprecate the correction of latent hyperopia in this class of patients for three reasons: first, as being unnecessary to the welfare of the patient; second, because it subjects him to present discomfort; and third, because it tends to weaken the internal recti muscles. It may be allowed where esophoria is present, and is of course proper in strabismus convergens.

We have before taken the liberty of differing with Dr. Theobald in his method of treating stricture of the nasal duct by slitting the canaliculus and using large probes, as we believe that the puncta should be preserved, and they may easily be dilated sufficiently to pass a No. 6 probe, and this, with the use of electrolysis (which the writer says he has used to a "limited extent" without effect), will cure these cases more rapidly than any other method with which we are acquainted.

We are glad to see that Dr. Weeks in his paper on Diseases of

the Conjunctiva makes a distinction between the croupous and the diphtheritic varieties, which are so often grouped together under the latter head, but which require entirely different treatment; and, contrary to the opinion expressed by the writer, we have never seen cases of the croupous form that failed to yield to the remedies used.

Under Diseases of the Optic Nerve, we think that retrobulbar neuritis has hardly been given the attention which its importance demands; the whole subject is included in two pages.

It would require too much space to go through the entire work, but it can be said that it is scientific, up to date, and well written throughout; contains as much information as can be crowded into the number of pages, is beautifully and very profusely illustrated, well printed, on good paper and handsomely bound; and is most cordially recommended to our readers.

SAUNDERS' MEDICAL HAND-ATLASES OF THE EXTERNAL DISEASES OF THE EYE, including a brief treatise on the Pathology and Treatment, by PROF. DR. O. HAAB of Zurich. Authorized translation from the German.

Edited by G. E. De SCHWEINITZ, A. M., M. D., Professor of Ophthalmology in the Jefferson Medical College, Philadelphia; Consulting Ophthalmologist to the Philadelphia Polyclinic; Ophthalmic Surgeon to the Philadelphia Hospital and to the Orthopedic Hospital and Infirmary for Nervous Disease. With 76 plates and 6 engravings. Philadelphia: W. B. Saunders, 925 Walnut Street, 1899. Pp. 228. Price $3.00 net.

This is one of Saunders' series of atlases, several of which have been already issued, and is a companion to the excellent "Atlas of Diseases of the Larynx," which was reviewed in our October number of last year.

The intention is to furnish in handy form and at a low price reproductions of the most important works of this character, by the best authors, and in the two volumes we have seen the object is fully attained.

The present work deals with external diseases of the eye, beginning with a most excellent description of the methods of examination, which is exact, up to date, and full of most valuable information.

The diseases considered are concisely but lucidly described, as to ætiology, symptoms, differential diagnosis, prognosis and treatment, and each is illustrated with a full-page plate in colors, of an actual

case of the disease, of which the history is given. The plates are certainly admirable in every respect ; beautifully colored, thoroughly well executed, and true to nature to a degree quite unusual, they convey more information to the reader in a moment than many pages of description.

Prof. Haab's eminence in the department of ophthalmology is a sufficient assurance of the value of his work, but in this instance the work speaks for itself.

Some of the conditions described and illustrated are comparatively rare and will commend the book not only to the student and general physician, to whom it is simply invaluable, but to the specialist in this line as well.

AN ESSAY ON THE NATURE AND THE CONSEQUENCES OF ANOMALIES OF REFRACTION. By F. C. DONDERS, M. D., late Professor of Physiology and Ophthalmology in the University of Utrecht. Translated under the supervision of the Kirschbaum School of Languages and Bureau of Translation of Philadelphia. Revised and edited by CHARLES A. OLIVER, A. M., M. D. (Univ. Pa.); one of the attending surgeons to the Wills Eye Hospital ; one of the attending surgeons to the Philadelphia Hospital, etc. With portrait and other illustrations. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street, 1899. Price $1.25.

The appearance of this classical production of the master will be welcomed by all who are interested in the study of refractive anomalies. As he states in the preface, the editor has not endeavored to intrude his own personality in the work he had undertaken, but has given each aphorism exactly as it appeared in the original, the result showing what slight changes in the fundamental principles originally laid down by the author have occurred during the thirty years which have elapsed since the essay was written, and illustrating in a remarkable manner the permanent value of deductions founded upon exact science.

The essay consists of a series of concise and positive statements grouped under seven heads, as follows:

Section I. Emmetropia and Ametropia.

Section II. Amplitude of accommodation (absolute, relative, and binocular) in Emmetropia and Ametropia.

Section III. Visual acuteness and projection in Emmetropia and Ametropia.

Section IV. Line of direction, center of rotation and movements of the eye in Emmetropia and Ametropia.

Section V. Acuteness of vision and amplitude of accommodation modified by age.

Section VI. Consequences of M. and H.

Section VII. Regular Astigmatism.

Any expression of opinion as to the value of this work is entirely uncalled for, and we can only indicate our gratification that it is placed before the profession in its present form, which is a credit to all concerned in its production.

RETINOSCOPY (OR SHADOW TEST) IN THE DETERMINATION OF REFRACTION AT ONE METER DISTANCE WITH THE PLANE MIRROR. By JAMES THORINGTON, M. D., Adjunct Professor of Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates in Medicine; Assistant Surgeon to Will's Eye Hospital; Ophthalmologist to the Elwyn and Vineland Training School for Feeble-Minded Children, etc., etc.; Third Edition, revised and enlarged. Forty-three illustrations, twelve of which are colored. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street, 1899. Price $1.00.

The third edition of this able little monograph is before us, and the fact that three editions have been called for in two years is a sufficient answer to any question as to its merit. While not so classical in its treatment of the subject as Jackson's work, it will prove more useful to the beginner. The author knows his subject thoroughly, knows exactly what the novice in this branch needs, and says it in the most direct and positive manner, taking nothing for granted, but furnishing the student with the most exact and accurate information possible, in the simplest and most concise language.

The present edition has been somewhat enlarged and contains some additional illustrations. It is the best work with which we are acquainted for those taking up the subject for the first time.

THE INTERNATIONAL MEDICAL ANNUAL AND PRACTITIONER'S INDEX. A work of Reference for Medical Practitioners. Seventeenth Year. 1899. New York. E. B. Treat & Co., 241–243 West 23d Street. Chicago: 199 Clark Street. Pp. 758. Price $3.00.

The time for the yearly visit of this valuable little volume is at hand, and we welcome it to our library.

It contains original articles from the pens of thirty-two physi-

cians of reputation throughout the English-speaking medical fraternity; among whom may be mentioned Prof. H. D. Chapin, on pediatrics; J. Dundas Grant, on the ear; F. de Haviland Hall, on pulmonary diseases; R. Norris Wolfenden, on practical X-ray work.

The arrangement of material is as formerly: 1st, New Remedies. 2d, Special Subjects, e. g., X-Ray, Climatology, Legal Medicine, etc. 3d, New Treatment.

At the end of New Remedies are four very valuable talks under the heading of Summary of the Principal Alterations in the New British Pharmacopœia: (1) Alterations in Strength. (2) Alterations in Composition. (3) Additions. (4) Notable Alterations in Nomenclature.

Among the subjects interesting to us as specialists are four finely produced colored plates of phthisis laryngeus complicated with other diseases, preliminary tracheotomy in malignant disease; Causes of Laryngeal Paralysis, as tabulated by Semon; new splint for fracture of nasal bones, pyemia resulting from suppurative inflammation of the middle ear; operation for ectropion of lower lid, etc.

A clear, comprehensive article on Mastoid Operation written by Dundas Grant, M. D.

Other very instructive articles that we notice are those on Bicycling for Women, Orthoform, Serpent Venom; but time and space forbid a further enumeration of nuggets of wisdom in this volume.

LEADERS IN HOMEOPATHIC THERAPEUTICS. By E. C. NASH, M. D., Philadelphia. Boericke & Tafel, 1899. Pp. 381.

This is a good book to read; one of those books that you can pick up at any idle moment and be interested in at once. Dr. Nash is evidently in love with his subject, and he takes it up, as he states in the introduction, according to "the movings of the spirit," with the result that the first remedy considered is nux vomica, which is followed by other polychrests, so that we first meet with the old and tried remedies, which are discoursed upon as only one who has had experience can do it.

The book is clearly impressed with the individuality of the author; the characteristics of the various drugs are presented, with comments on their value; comparisons are made with other

drugs having similar action, and the differences shown. The writer states that he has endeavored to present the subject in a manner calculated to interest the physicians of the old school, and to induce them to experiment along certain lines. He certainly should succeed in interesting such at least, provided they are sufficiently unprejudiced to read what he has written. The book has a good index, with cross references which enable the reader to find all the comparisons, although here and there mistakes will be found, as when stannum is two or three times indexed under stramonium.

KEYNOTES AND CHARACTERISTICS, WITH COMPARISONS OF SOME OF THE LEADING REMEDIES OF THE MATERIA MEDICA. By H. C. ALLEN, M. D., Professor of Materia Medica and the Organon in Hering Medical College and Hospital, Chicago. Philadelphia and Chicago: Boericke & Tafel, 1898. Pp. 179.

Dr. Allen's book will be found very useful by students of materia medica. It takes up the remedies alphabetically, giving the characteristic symptoms which have been found accurate, with comparisons with other drugs having similar action. The aggravations and ameliorations are given so far as known and the relations with other remedies and as affecting the different parts of the body.

The arrangement is very compact, the style interesting, and some remedies will be found which do not ordinarily appear in books of this character. It will, without doubt, be a popular book.

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THE JOURNAL OF OPHTHALMOLOGY, OTOLOGY AND LARYNGOLOGY.

EDITOR.
CHARLES DEADY, M. D.

ASSOCIATE EDITOR,
A. W. PALMER, M. D.

OPHTHALMIC AND OTIC USES OF SOME ANIMAL EXTRACTS.

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THIS title is not strictly correct, in that the substances herein spoken of, are, perhaps, more properly designated animal products or derivatives, as they are, with one exception, used exactly as found in the anatomical state, have only been dried the better to preserve them, and *none* having received any *chemical treatment.*

Protonuclein.—This is said by its makers to be the *active* or *life* principle, the nuclein, of every gland in the body together with that of the brain.

The extraction is mechanical, after which the product is dried. It is furnished in two strengths, the "Special," being full strength, intended for local use *only*, while for internal use a triturate in sugar of milk is provided. The active principle is freely soluble in water heated to 98° F., but as there is also present some insoluble organic matter, the solution must be filtered or allowed to stand until this has settled, and then decanted. This solution will, if made with distilled water, keep well in cold weather, but in summer it is more satisfactory to make a fresh one each day. They must *never* be *boiled*, as heat over 100° F. renders the active principle inert. To make the solution, add to 1 dr. of distilled water previously heated 10 or 15 grs.

of the special powder; shake well for a few moments, and filter. Personally, the only use I make of the solution is to occasionally give it to the patient for home use, the powder being more satisfactory for office use and is the form used in these studies, unless otherwise specified.

My study of this remedy was begun something over five years ago. I have endeavored to make it thorough, as exhaustive as possible, and accurate. Each and every chemical result herewith presented has been verified many times over, a written history of each case made at the time, and the cases kept under observation for from one to three years after discharged as cured. No selection of cases has been made for this report, but they were on the contrary taken at random from my casebooks, only having been arranged in certain order, the better to illustrate certain phases of action, which are "A" (those cases where a stimulant or nutrient is clearly indicated and), "B" (those illustrative of its peculiar action on morbific growths or organizations).

Class A.—Case I.—Miss Z. V. H., age eighteen. First seen September 19, 1895. When four years of age the cornea of R. E. was torn by being accidentally struck with the sharp point of an iron handled runner, while at play with a younger sister. Three weeks after the accident happened the patient was placed under the care of Dr. J. H. Buffum, who succeeded in saving the eye, but gave no encouragement to the hopes of useful vision.

Present condition.—R. Eye inflamed and painful, sensitive to pressure, worse from use of the other eye, if she catches cold or for any reason feels worse than usual. Apt to be inflamed and always painful at each menstrual period. No increase in tension. Patient very nervous, slightly hysterical, some choreic symptoms present. Great deal of headache, which always settles in nape of neck and between shoulders.

Sore, tender spot, size of half dollar, on the spine of fourth dorsal vertebra, general anæmia. Under atropia and very dark glasses, continued for two weeks, many of most distressing symptoms disappeared or grew very much better. R. E. still sensitive to touch, but not inflamed; T. normal. On account of extreme irregularity of cornea, no view of fundus was possible. For the

same reason failure was met with in the attempt to use Javal and the Placido disk. Under oblique light cornea is seen to be more convex than the normal, and to contain several irregular-shaped scars. V. cannot count fingers nor find way about the room. Sees ten duplicates of candle flame. With stenopaic disk at ax. 50° with — 9 lens, only 3 images are seen. V. counts fingers fairly well, at 6 ft., L. E. slight amount of Has. Advised opaque glass for R. E. and correction for L. E. Patient refused to wear such correction, and would only consent to wear a broad black velvet ribbon to exclude R. E. during near work at home. Some improvement resulted from this, but it was very unsatisfactory. Patient was now seen by two well-known oculists of the old school, at my request, who both advised enucleation as the *best* treatment and *only safe* course. Consent to this was emphatically refused by both patient and parents. Referred patient for general treatment, and began the use of protonuclein locally. Cornea was liberally covered with the powder, and then direct massage with a silver spatula practiced for five minutes. Treated three times per week. Treatments continued regularly for three months, when the massage was discontinued except at rare intervals, but the protonuclein was used with more or less regularity until April 28, 1898, when a second attempt at correction under scopolamine 2. D. reflection at 60 mins. was made. R. E. Javal ax. 130° 44.5 D. ax. 40° 51 D. against rule; images in these meridians are clear, regular, and sharply defined, a variation of 2° either way, however, will render them so distorted as to be almost unrecognizable. Full correction as obtained by skiascopy was ordered. V. uncorrected, fingers at 8 ft. with — 1. D.— 7. D^{c}. ax. 40° 15/60, 3 letters, sees two faint images of candle flame, one on either side of the bright flame. These were evidently only reflections due to prismatic effect of heavy concave cy., as they soon disappeared, unless she looked for them. L. E., Javal ax. 180° 43. D., ax. 90° 43.8 D. Skiascopy + 63. D^{c}. ax., 90° V. = 15/20. Evidences of old choroiditis. In right eye, no evidence of the scar tissue can be discovered with + 24. D. lens and reflected light. Cornea clear and smooth. This patient has recently been examined with the result of obtaining V. — R. E. = 20/40 and Jager No. 5 at 10 in. reads music and newspaper readily, only an occasional headache. Eye never painful nor inflamed. Sore, tender point on spine

and ache between shoulders entirely gone, is fleshy, pretty, and consequently happy.

Case II.—Miss J. S., age forty, referred by Dr. B.

History.—Has been troubled all winter by something on R. cornea ; been under care of old-school oculist for past four months with varying, but wholly unsatisfactory, results. Never better than at present time (June 15, '96). Inflammation and infiltration of cornea is so extensive that a careless examination might lead one to pronounce the trouble keratitis, instead of what it really is, an extensive superficial ulcer, measuring .2½ mm. in diameter, with ragged edges and numerous small vessels extending to the limbus. Extreme lachrymation and photophobia.

Treatment.—Curetted entire ulcer thoroughly, flushed it with solution of formaline 1/1000. Gave patient solution 1–10 per cent. of scopolamine to be used every two hours and kali mur. 30x, one powder every four hours. In five days ulcer healed and cornea almost clear. This improvement only lasted a few days, when she returned with eye in almost as bad a condition as when first seen. I now learned from Dr. B. that patient is addicted to the use of morphine. Judging that there was a lack of nutrition to cornea, ulcer was again curetted and flushed as before. Cornea entirely covered with protonuclein powder and light pressure bandage applied. Ulcer entirely healed in thirty-six hours, slight haziness of cornea alone remaining. Treatment was continued every day for eight days, then every other day for two weeks more. Kali mur. 30x was given twice a day for the first ten days. At end of treatment cornea was clear and brilliant. Patient has had no return of trouble up to the present time.

Case III.—Delayed union following extraction of cataract. Mr. G., aged eighty. In good health and vigorous as a man of seventy. Had been a drinking man for thirty-five years, but for past five or six years has not drank any at all. The wound made for preliminary iridectomy healed promptly and apparently solidly. Six weeks later I extracted the opaque lens. The wound being entirely in the cornea. Capsulotomy was done with forceps, and entire operation from start to finish very satisfactory. Edges of wound coapted nicely. Eye closed with adhesive plaster and protecting wire mask applied, no pain, inflammation, or untoward symptoms at any time present, yet at the end of ten days wound remained open as freely as when made.

Dusted wound very plentifully with protonuclein powder and closed as before. At end of thirty-six hours anterior chamber established for the first time since operation. Dressing was repeated twice, when patient was dismissed, with very faint gray line marking sight of line of incision.

Class B. Case I.—Trachoma and pannus. Daisy D., aged nineteen. Referred by Dr. W., July 7, 1898. Contracted trachoma in infancy, and in spite of several active courses of treatment has steadily grown worse. *Present Condition.* R. E.: Vis. can see movements of hand, but not count fingers, at 2 ft.: L. E. Fingers at 6 ft. Lids considerably contracted. Palpebral fissure so short that lids cannot be everted. Considerable entropium in both eyes. Cornea uniformly densely infiltrated throughout entire surface. No light reflex possible. July 17, under A. C. E. anæsthesia did a free canthoplasty on each eye, together with thorough expression of trachomatous bodies, with Knapp's roller forceps. Only the upper lids were treated, as patient did not take the A. C. E. well.

Dressing.—Following operation, the lids were cleansed of all traces of blood by sponging cotton with hot formaline 1–1000 solution, dusted with protonuclein powder, and the powder well rubbed in and again plentifully dusted, together with the wounds at the angle, lids closed with adhesive plaster, dusted over again, covered with light pledgets of absorbent cotton (which had been previously thoroughly impregnated with protonuclein powder) which were held in place by wire masks and tapes. Dressing remained in place for forty-eight hours; wounds healed by first intention. No swelling in the lids. From this time until September 1 eyes were treated every day. First cleansing well with formaline 1–1000 solution, then applying Hodge's argentum iodidum mixture,* considerable force being used in rubbing same in the lids. Eyes were closed and massaged for five minutes through lids.

At the end of ten days, the corneal condition not improving, protonuclein was substituted for the Hodge ℞, every other day,

* Hodge ℞ consists of two solutions: No. 1, arg. nit., ʒ i; glycerine, ʒ ii; aqua, ʒ i; mix. No. 2, potass. iodide, ʒ ii; glycerine, ʒ iv; aqua, ʒ ii. mix sig, T. 5 gtts. of No. 1, on a clean watch glass; add 10 gtts. of No. 2. Apply resulting yellow precipitate to the lid with cotton-covered applicator.—*Ophthalmic Record*, vol. i. page 85.

using it liberally and massaging through closed lids for five or ten minutes. Cornea began to clear almost immediately, continued to improve until, when dismissed, only by using a + 26. D. lens could any fine dots be discovered. The upper lids were smooth, covered with healthy conjunctiva, and free from scar tissue. In the lower lids the trachomatous bodies, following the use of protonuclein powder, were noticed to become more prominent; that is, they seemed to become more like small round grains resting on the healthy conjunctiva, at the same time gradually growing smaller as treatment continued, until they entirely disappeared. Vision of this case, when dismissed, corrected, was R. E. 20/40; L. E. 20/35. Jager No. 4 at ten inches. Duration of treatment nine weeks.

Case II.—Leucoma. Mr. Paul W., aged twenty-seven. Referred by Dr. W., July 27, '98. Some time ago, while a medical man was attempting to cauterize a small nodule on the upper R. lid, a granule of the mitigated stick became loosened and dropped into the eye. A dense white leucoma, triangular in shape, covering the lower temporal quadrant of the cornea, apex nearly in the center, was the result.

Treatment.—The scar was covered well with protonuclein powder, and massage applied direct to it, with a silver spatula, again covered with the powder, the eye closed and an exclusion bandage applied, to be retained two or three hours. Patient was directed to apply an ointment of 1 gr. of merc. to the oz. of vaseline, to the eye at night and massage for ten minutes through the closed lids. In the morning to bathe the eye for ten minutes in very hot water, and immediately follow with bath of iced water for an equal length of time. At end of six weeks patient discharged with only a small spot of light gray near the corneoscleral junction in lower temporal quadrant. Remainder of cornea clear. Vision 20/60. Old choroidal changes precluded any better result.

Case III.—Suppurative otitis.—Mrs. A. age thirty-eight, referred by Dr. A., whose wife she was, and under whose care she had been up to the time she came to me.

History.—Something over two months ago she was attacked with la grippe, then prevalent, during which the middle ear became implicated. Both ears were attacked, but only the R. ear suppurated; the discharge, which was very acrid, excoriating, and plentiful, had existed for nine weeks. There was a small per-

foration of Shrapnel's membrane, while almost the entire lower half of the membrana tensa was destroyed. Within the tympanic cavity and on the edges of the perforations were numerous granulations. The ear was thoroughly cleansed by spraying it with pyrozone three per cent., and wiping out with absorbent cotton. Some pyrozone was next dropped into the external canal, and, by means of a tip fitted to the compressed-air cut-off, forced through the eustachian tube into the post-nares.

Protonuclein powder was now blown into the middle ear, using compressed air and sufficient force to get powder distributed to all parts of the cavity. Patient was directed to cleanse the ear by dropping in pyrozone with a dropper, until all bubbling ceased, making the application every two hours. Patient was treated every day, and although five days were lost on account of a crop of small boils, on February 3, two weeks from the first visit, only a slight bland discharge remained, which entirely disappeared during the next three days. Treatments were continued three times a week until February 27, when patient was dismissed; hearing distance increased to 36/120 from 3/120 and perforations in M. T. both completely repaired. Duration of treatment six weeks.

Supplied Blood.—Studies were first made with fresh bullock's blood, but had to be abandoned on account of inability to preserve the blood. Later defibrinated bullock's blood, known as Bovinine, was used with perfect satisfaction. This remedy has some actions in common with protonuclein, but is not so handy to apply. I will only cite two of the many clinical cases in which it has been successfully used.

Case I.—Lupus of upper (L.) eyelid.—Miss C., aged twenty. This case came from a general surgeon of undoubted ability, who had had two microscopical examinations made confirmatory of the diagnosis. It had received the usual treatment for three months, and although at one time almost healed has broken down again, and is now 1 cm. long and 15 mm. broad. Very angry, general health not good, much emaciated.

Treatment.—Ulcer was curetted and cleansed by spraying first with Bovinine and then with pyrozone three per cent., washed off with Listerine solution, sprayed with five per cent. pyrozone, and washed again with Listerine. Edges of ulcer cauterized with electric cautery and gauze dressing applied, which was kept

moist with Listerine for thirty-six hours. Ulcer was now clean and not nearly so angry-looking. It was again cleansed with pyrozone three and five per cent., and same dressing applied for forty-eight hours longer. At end of this time ulcer looking much better, and patient complaining very much of the severe pain in it, it was determined to commence the use of supplied blood. After cleansing ulcer it was sprayed with the blood, covered with eight layers of gauze thoroughly saturated with the remedy, a sheet of rubber was placed over the gauze, the rubber covered by two layers of dry gauze, and the whole painted with collodion, except at the upper edge, which was left unfastened. Bovinine was applied by means of a dropper at this unfastened edge, every two hours ; this keeping the dressing saturated constantly. The remedy was also given internally in tablespoonful doses, every three hours at first, soon increased to a wineglassful every four hours, with a wineglass of old port wine night and morning. The dressing was not disturbed for one week. The pain disappeared at the end of twenty-four hours, never to return. Wound steadily improved until at end of four months patient was was dismissed cured, the site of former ulcer being covered by a soft, smooth, pink scar. Patient had gained nine pounds while under treatment. Two years later patient is plump, healthy, and happy, cure apparently perfect.

Case II.—Mrs. A., aged thirty-eight. Traumatic necrosis of left mastoid. Necrotic bone was thoroughly scraped and chiseled away, cavity mopped out with pyrozone twenty-five per cent., packed with gauze which had been soaked in iodoform Bovinine, dressing was kept saturated by dropping on fresh Bovinine every hour. Dressing was changed every twelve hours for first three days, the cavity being cleansed with pyrozone five per cent., each time. On the fourth day plain Bovinine was substituted for the iodoform Bovinine, and the dressing changed only once in twenty-four to forty-eight hours. At end of six weeks the cavity was completely filled with new bone and the edges of the flesh wound, having been freshened and brought together, healed nicely, leaving scarcely any scar instead of the usual unsightly condition.

Suprarenal Capsule.—The preparation used was that of Armour & Co., and is the dried glands of the sheep, powdered. Much difficulty was experienced in preparing a

satisfactory solution, owing to its ease of putrefaction. This has been to a degree overcome by the following method: 10 grains of the powder are added to 1½ dr. of freshly boiled distilled water contained in a large test tube, the mixture is well shaken, corked with cotton and allowed to stand for an hour or two, occasionally shaking it. It is now boiled for ten minutes and filtered into a clean glass-stoppered bottle. Solutions prepared in this way will, in moderate weather, keep eight or ten days to two weeks. The boiling does not seem to interfere in any way with the peculiar action of the drug. For use in warm weather a solution of formaline 1–1000 may be substituted for the distilled water with some advantage. However, solutions prepared with formaline, while they seem to act in all other ways the same as other solutions, lose, I think, somewhat in their power as hæmostatics. Solutions, so long as they remain clear and retain their peculiar "fresh" odor, have not deteriorated; even where the odor becomes quite pronounced they still remain efficacious. Studies intended to demonstrate the remedial action of this gland have uniformly been failures, if we except slight inflammations and injections of the M. T. and conjunctiva. It is, however, a highly useful drug to the oculist and aurist, owing to three peculiar properties which it possesses: *i. e.* (*a*) That of blanching mucous membranes, whether they be actively inflamed or only slightly injected; (*b*) of controlling, even to the point of often preventing entirely, hemorrhages, and (*c*) aiding, strengthening, or increasing the absorption or penetration of certain drugs. It has proven itself useful in cases of abraded cornea, foreign substances in the eye, trachoma, and all conditions which give rise to intense injection, and where it is desirable for any reason to produce cocaine anæsthesia, which, under those circumstances, is so difficult of proper accomplishment. If the inflammation be very great, it is desirable to invert the lids and allow a few drops to flow gently down over the inverted surface into the eye. Wait a few moments and apply the cocaine, four to ten per cent. in the same way, and in a

short time make a second application of the suprarenal solution. If very profound anæsthesia is required, it is necessary to make two or more applications of the cocaine, or use the stronger (ten to fifteen per cent.) solutions. Under anæsthesia produced in this way I have performed iridectomies, extractions, advancements, curettements, cauterizations, Knapp's operation with the roller forceps, excision of M. T., and several minor operations within the middle ear, all entirely painless and surprisingly free from hemorrhage.

Thyroid Gland or *Thyroidine.*—The source and method of performing the solutions are the same as already given for suprarenal. An unexpected and protracted sickness renders this report, unfortunately, very unsatisfactory, and it is incorporated at all only in the hope that it may induce some of the fellows of this association to take up, and complete the study of what I think will prove a useful adjunct to our art. Unlike suprarenal, this gland seems to have a decided remedial action. It was used successfully in tumors of the conjunctiva and lids, pterygium, exophthalmos, and follicular conjunctivitis.

Summary.—Protonuclein has a decided action upon the nutrition of the cornea, greatly aiding it. It also appears in some way to affect the growth and continuity of tumors, etc., as is instanced in its action in trachoma. It produces decided and marked ear symptoms, when given in large doses. These symptoms closely resemble those of chin. sulph., with which remedy they are here compared.

PROTONUCLEIN.	CHIN. SULPH.
Deafness in both ears, unaccompanied by any particular headache or symptoms. Tinnitus, ringing of bells, buzzing, ill-defined ringing in *both* ears, cannot hear sounds because of it.	Deafness in both ears, full, confused feeling, and headache accompanied by ringing; almost always in left ear, very rarely in R.
Persistent ringing of small bells.	Same.
Nervous, weak, and unsteady heart, rapid increased action.	Same.
Pulse, full, strong, bounding.	Small, weak, easily compressed.

Used according to these few symptoms, in anæmic

patients, suffering with tinnitus, results have been uniformly good. The active principle of protonuclein is destroyed by solutions containing alcohol, mercury, chlorine, or Bovinine, their salts, acids, or alkaloids. It is *not* affected by iron, strychnine, quinine, arsenic, iodine, phosphorus, or their salts. While it must not be used in combination with or closely following the use of its incompatibles, it will very materially enhance their action if used two or four hours before them.

Supplied Blood.—This was found to be frequently successful in ulcers where protonuclein had failed. It has a very decided antiseptic deodorizing action. Is an excellent anodyne, patients invariably experiencing a relief from pain in a short time after its use. It aids vitality greatly. It has been successfully used in the dressing of operative wounds, ulcers, burns, and scalds; in the treatment of necrosis and skin-grafting. As it is necessary that the part under treatment be kept constantly bathed in it, it is only applicable where a dressing can be used, thus almost precluding its use *within* the eye or middle ear.

AURAL MASSAGE.

BY HENRY C. HOUGHTON, M. D., NEW YORK.

Definition.—Massage is the act of manipulating the body in such a way as to modify its function in part or as a whole. The word is from the Greek "to knead," through the French (ma säzh'), *masseur* (ma sèr'), masseuse, (ma sez'), terms applied to persons who practice the art. Sometimes incorrectly applied to a machine. General massage is produced by kneading, striking, vibrating, rubbing, and other modes of moving the tissues of the body so that the arterial, venous, lymphatic circulation, is changed, as the ganglia and terminal nerve filaments are stimulated, thus affecting the entire nervous system.

Nature and Scope.—Aural massage is of the same nature, has the same purpose, and, in a limited sense, the same scope. A brief study of the anatomy, physiology, and pathology of the ear will convince the unbiased mind that it is as valuable locally as it is generally.

Audition is the function of reception, conduction, and perception of sound force; the perfection of this function depends on the integrity of the external ear for reception and synthesis, the middle ear for conduction, the internal ear for perception. Pathology shows us that it is the function of the middle ear that is specially increased by massage. Catarrhal disease of the middle ear, either alone or leading to suppurative disease, is the cause of the great majority of cases of deafness. Alone, it causes in the hypertrophic form of disease such thickening of mucosa, and increase of secretion, that sound waves cannot reach the internal ear; in suppurative disease the mechanism of

the middle ear is so changed in its relation that the same is true of the function. Even if suppuration cease and the condition come to be classed as catarrhal again, the consequences of suppuration are like in kind with those of simple atrophic catarrh adhesions, pseudo-anchylosis, etc.

Toynbee was the first writer to do any extensive work in showing the actual condition existing in these cases, and his collection of preparations of the middle ear is his best memorial. During the last quarter of a century a more advanced step has been taken by our English and Continental aurists, by joining the clinical history with the post-mortem study and preserving the specimen for our study. From these, we can draw general conclusions as to the probable mechanical conditions existing in the mechanism of the tympanum of any case with similar clinical history.

Not to dwell on this item, we find in atrophic cases, either simple or complicated by a history of suppuration, dense adhesions between the drumhead and the ossicula, between the ossicula themselves, or between the drumhead and the inner wall of the tympanum ; threads, bands, dense masses of scar tissue, etc. Hence, the sound waves cannot reach the internal save in a limited degree. Aural massage does for this mechanism what general massage does in a similar anatomical relation—the shoulder, arm, forearm, hand. Place the first at the shoulder on the same side and you have a parallel relation. What passive motion does for the greater, aural massage does for the lesser.

History.—Aurists have sought for some means of causing passive motion of the drumhead and ossicula. Siegel's otoscope, designed for diagnostic purposes, came to be used by many, Lucæ's pressure probe, Delstanche's pump. I myself used Siegel's otoscope with alternate action from a breast pump, and made a series of trials of apparatus for massage, devised by the late George H. Taylor, M. D., well-known in this city as an advocate of the Swedish system. No special advance was made till Dr. Maloney, of Washington, D. C., devised his otophone. Even then, the device was not appreciated till Dr. Garey, of Baltimore,

gave a wider use to a vibratory diaphragm, using a stethoscope with the phonograph. In March, 1892, I visited Dr. Garey at his clinic, and have given in a previous paper my views of the matter.

The phonograph served well its purpose, and still gives, in a limited way, more than any one instrument, as one can get great variety of vibration from it by changing cylinders. Dr. Garey turned from it to his vibrometer, in the attempt to combine tones and noise, but my experience is in keeping with those who abandoned it for an instrument capable of producing tones. Dr. Wilson, of Meriden, Conn., Dr. Bissell, of Rochester, N. Y., utilized the guitar with uniformly good results. I turned my attention to the organ, and succeeded to my satisfaction, till now I have four illustrating the doctrine of evolution; as well as dispersion of filthy lucre. By the use of single tones, chords, and simple harmonies, one can bring the auditory nerve to perfect function, as the function of the middle ear improves.

Since the utility of aural massage has been demonstrated, instruments have multiplied, and there is no doubt that, by united effort, some device more simple and effective will be devised. In another place, I have given results obtained by combination of faradic energy combined with diaphragm vibrations. Dr. W. R. King, of Washington, D. C., devised a similar apparatus. In the April number of the JOURNAL OF OPHTHALMOLOGY, OTOLOGY AND LARYNGOLOGY, I offer my colleagues a somewhat limited experiment at widening the use of the pump as a means of doing the pioneer work in aural massage, especially in very difficult chronic cases. In 189– Dr. H. E. Waite made for me a pump to be run by a small electric motor; the rapid condensation and rarefaction of air was communicated to the drumhead by a stethoscope, as in similar efforts at massage, the effect being much like that produced by Siegel's otoscope or Delstanche's instrument. Later, a similar instrument was brought out by an aurist in Pittsburgh, Chevalier Jackson. Dr. Waite afterward improved the plunger, and I found it valuable in suppurative cases, but it was not until last September that I

realized my ideal in a plant built upon specifications given to Mr. Wappler, of the Wappler-Fayer Co., of New York.

Since the above-mentioned articles were written, my attention has been called to the instrument devised by Dr. Stephenson, of Lowell, Mass., which is similar in character, and from the use of which Dr. Stephenson and others have obtained excellent results.

Methods.—Whatever devices have come to be used in the seven years covered by the history just given, the method has been to cause vibration of the drumhead and ossicula by sound force conveyed to the tissues of the canal and membrana tympani by the column of air contained in an ordinary stethoscope. The only exception, so far as I know, is that of the direct application of force by a pressure probe (Lucæ), or some rapidly vibrating probe having a lateral motion such as is used in massage of the nares. There is nothing specially new in this direction.

Last autumn, soon after my plant was put in by Messrs. Wappler & Fayer, while using the blowing action to force an insufflation, I was able to open the eustachian tube by a succession of gentle impulses. This led me to the study of phonation, the idea being suggested by Dr. Lowenberg, of Paris, in an essay on the "Physiology of Vocal Tones," which he kindly sent me. By using a suitable nasal tip, one can convey to the entire tissues of the nares, nasopharynx, eustachian tube, and middle ear, the vibrations of the column of air in the tube attached to the pump, and can modify the same as the pharyngeal muscles are brought into action by vocal sounds; *ah*, *oh*, *e*, *ou* give a different vibration, the first two acting to produce the vibration more in the nares, the second two causing vibration back and into the middle ear.

I have been surprised at the uniformly favorable testimony of patients to this entirely new departure. I do not think it is psychic. I trust my colleagues will make reports on their observations, that the truth may be reached; one observer may be biased.

Results.—In another relation I have given my views of

the effects of massage. I need not go into that matter now, as we shall not disagree as to the effects, or how they are produced, but there are one or two points on which it may be well to enlarge. It is my conviction that simple noise does not suffice to restore audition to normal standard; it does the rough preliminary work, but must not be pushed too far. There is too much noise in the world, too little harmony. We need to have modulated tones, and musical tones follow noises, with good effects leading to the perception of the modulated tones of human speech. While this is true, passive motion by some device, which acts as does Siegel's otoscope, is more effectual in overcoming rigidity of the middle ear-mechanism, than is sound alone; still, the sound made by a pump, run at a high degree of speed, is not a disadvantage, but rather otherwise.

In the earlier study of aural massage, the aim was to secure succussion of the mechanism, and when the pump came to be used we dealt with the catarrhal form of disease, finding the instrument valuable in cases in which there was a history of previous suppurative disease. In my own experience, the fact of its great value in suppurative disease was rather a surprise, from observing cases in which there was suppurative disease of one ear complicating the catarrhal disease in the other ear. Later the pump has been used in all suppurative cases. When Dr. Winslow told us at Deer Park of the unique results gained by suction, in a case of suppuration involving the attic, we little thought of the wide scope of that simple act! Massage by suction gives more brilliant results than any other phase of this treatment, transforming a chronic indolent condition into an active repair in a few days.

Dangers.—Every force for good may be turned to evil uses, so of aural massage. The advice of the great artist was good: "mix your paint with brains"; exercise caution in all cases. I am positive that one may cause concussion of the auditory nerve by long continued, frequently repeated noise produced by some machines used for aural

massage; indeed, the deep organ tones may be used to excess. Heroic dosage is to be avoided in bringing to action upon the ear any form of energy whatever; this is true of galvanism, faradism, the static, and it must be true of sound force. Any pump that is capable of doing the work needed in very rigid tissues may do harm. This is true especially in suppuration; in a number of cases slight hemorrhage has been produced, even while watching the effect, and the result was all that we could desire, because measures were taken to keep the tissues clean and a remedy given which controlled the active condition. In one case a patient, whose cerebral gray matter must be more dense than his mucosa, disobeyed directions while under close watch and care, and I was obliged to remove the stethoscope from his ears with my own hands. Ecchymoses of slight area were made in the cutis of the external meatus; but the drum-head was only slightly congested, and the middle-ear condition was made better by this radical treatment. One can infer what might occur in dealing with slight neoplastic tissue. Hence, be very careful that your pump is adjusted before starting. The same is true of my method of massaging the middle ear *via* the eustachian tube. As the air pressure that forces the tissues of the anterior nares apart may be stronger than is needed to force the eustachian tube during phonation, one must be careful not to be in haste to force air through the nares; let the action there be continued—it is very beneficial; it is quite as important to reduce the mucosa of the nares as it is to fire open the eustachian tube; other things being equal, if the nares are well open, we have no trouble at the eustachian tube.

Therefore, let the vibration of the middle ear be gentle, except perhaps in old cases with very rigid mechanism.

The following cases illustrate some of the later phases of aural massage; the earlier experiences are undoubtedly familiar to all my present audience, and need no comment as to technique.

One of each of the usual types of disease will be enough to illustrate my new method.

Mrs. S., age fifty. Diagnosis: Otitis media cat. chron. First seen, September 29, 1893. R. failed one year ago. H. D. watch, R. $\frac{5}{240}$, L. $\frac{20}{20}$, canals clear. R. Mt. depressed, adherent; L. normal. Pharynx, thin tissues, but not specially abnormal; slight secretion of thin white mucus; subjective puffing. Under faradic current and auto-inflation, she gained in six months to, R. $\frac{10}{20}$, L. normal. During the next two years she kept nearly that degree of function, then became discouraged. I saw her only occasionally during the succeeding years. Sickness, loss of her husband, a hard struggle in life, were factors that kept her depressed till she became very deaf for voice.

February 17, 1899, she came on one of her occasional experiences of headache from acute catarrh, with increased subjective noises, and was induced to come for treatment regularly. The result has been remarkable. The perception of all noises has increased, so that she hears them promptly and at a distance; also musical tones, but modulated tones are not as well recognized; some tones are clear, others seem muffled, and the mental concept of tones that are not clear, is very tardy. Later, it dawns on the patient. Certainly, the present status is one not anticipated at the outset of the treatment, four months ago.

Mr. W. M. C., age twenty-two, October 19, 1895. Diagnosis: Otitis media sup. chron.

History: measles when a little child. Both ears discharged; then healed; since then deafness has come on with colds.

Present state. H. D. watch, R. $\frac{1}{240}$, L. $\frac{2}{240}$. Canals clear. Mtt. scarred, irregular, immobile. Pharynx adenoid. Nares hypertrophic. Ett. dilatable. Has been suffering for days with acute catarrh, but the ears have escaped.

Under ferrum phos. for acute conditions and hepar for suppurative exacerbations, he made good progress. Four months later, R. $\frac{2}{20}$, L. $\frac{1}{20}$.

June, 1898. He was seen only from March to June and maintained good condition.

November 17, 1898. He was seen, having got cotton too deep in meatus, while cleaning the left ear; but could not be made to realize the need of attention.

January 23, 1899. He came and followed up treatment with more regularity, the secretions being removed by suction as before.

February 16, R. Mt. came forward and L. Et. opened, and tissues were quite free from moisture.

March 24. Perf. clearly defined : masses of white cheesy pus were dislodged from pockets. Tissues more normal.

May 18. Canals and memb. tymp. quite clean, slightly moist, but not purulent. Perf. (L.) a mere pin-point. H. D., watch $\frac{20}{20}$, R. and L. diff.

Mr. J. A. B., age fifty-two. Diagnosis : Otitis media cat. acuta.

History : ten years ago had abscess in L. from cold. Two years ago, similar attack. Perfect recovery, which I question.

May 17, 1899. After riding on bicycle when weary, had sudden pain in left ear. Telephoned for afternoon appointment, and came in pale, depressed, in intense pain. L. canal bathed with bloody serum. Mt. congested to an extreme. Pharynx angry red, thick tissues. Ferrum phos. 2x every ½ hour and gelsemium 7c., when pain lessened.

May 18. Better before midnight ; same appearance, and slight perf., same remedies. Seen daily for one week, when the rapid improvement warranted an outing over Decoration day.

On May 25 I was able to massage the ear by suction as well as blowing, and on May 31 the perforation was closed ; it did not yield to quite forcible massage.

June 4, the congestion had nearly diasppeared, and the outlook is that the ear will become better than for years before this attack.

Lesson : Treat acute cases with the purpose to secure better conditions, before the tissues return to their former rigidity.

Mr. C S. P., age fifty. Diagnosis : Otitis media sup. acute. May 15, 1899.

History : strictly classed, this is a case of chronic suppuration presenting symptoms of a more active sort, due to neglect. Patient was first seen February 10, 1881 ; when, after head cold, acute otitis set in, affecting both ears. When a child, scarlet fever was complicated by otitis.

Some weeks since was called at night to see the patient at his residence, and gave relief ; now another alarm, at finding the right ear closed, precipitates a call for relief.

The present state is soreness and tumefaction of R. canal and entire cartilage extending into soft tissues, before and behind the

auricle. The canal is nearly closed by a mass of tissue, cellular, bleeding easily and mobile on a base which seems to be posteriorly secured. The canal was cleared as fully as possible, and equal parts of vaseline and ether applied, after touching the granulation mass with sulphuric acid. Hepar sulph. was given internally.

Three days later the mass was curetted and the base touched with acid ; the next day the ear was thoroughly syringed and massage by suction and blowing used, with immediate relief ; but no opening of Et. since then. Three treatments each week have been given. To-day (June 5) the drumhead is nearly free from moisture and becoming more clearly defined ; the air passed freely to both tympana, the patient says he hears better than he has been able to do for many years. As he proposes to make a trip to Europe July 1, to be absent three months, I shall make an exact record of the degree of acuteness of function just before his sailing, to compare with the future reports.

Relief from acute conditions was the impelling motive for treatment, not increase of function.

The adage of the new broom is not out of my mind. This is an age of fads. But I am free to admit that this latest phase of massage has more of promise in it than any form of local treatment which has come to my hands since 1867.

THE INFLUENCE OF HYGIENE UPON THE UPPER AIR TRACT.

BY HERBERT W. HOYT, M. D., ROCHESTER, N. Y.

IS it true that specialists are inclined to lose sight of the fact that the human body is composed of many members, all more or less interdependent?

Dr. Sheppegrell recently said: "The nose and throat specialist should avoid the tendency of becoming narrow in his views, and of seeing the patient only through the nasal speculum and laryngoscopic mirror; he should be as familiar with matters of general medicine as the general practitioner, and should make it his motto not to know less of general medicine, but to know more of rhino-laryngology."

This is not laying out an easier field of work for the specialist, but a harder one. It seems strange that there should be any question as to whether the condition of the abdominal organs influences the upper air tract. But so eminent an author as Bosworth says in his text-book: "The mucous membranes of the different portions of the air tract are in exceedingly close sympathy, and a morbid process in one portion is very likely to be followed by a morbid process in another, but that there is any sympathy or connection between the mucous membranes of the air tract and the mucous membranes of the food tract I do not believe." Later, in a discussion in the American Laryngological Society, he partially retracts, and says: "Constitutional state has very little to do with diseases of the nose, but very much to do with the nasopharynx." Everyone else in the discussion took the ground that the whole air tract was influenced by the other organs.

The anatomical nature of the upper air passages, with their abundant supply of blood-vessels, makes them physiologically and pathologically very susceptible to congestion. The lymphatics, so prodigally supplied in the nasopharynx and pharynx, make a nidus for auto-intoxication surpassing any other portion of the body. General practice teaches one to know that indigestion and constipation cause congestion of the portal circulation. Obstruction in this large venous system causes congestion in more remote regions. By inquiry it is nearly always found that constipation or indigestion is a characteristic of those troubled with hypertrophic rhinitis. It is commonly known that one often takes cold after a very hearty dinner or late banquet, but the portal obstruction or congestion is not the only factor in such cases. The intestinal tract is a very fertile source of auto-intoxication, if the fermenting matter is not readily passed off; and when produced, how can this poison be thrown out of the system, except by the kidneys and mucous membranes of the respiratory tract?

Another interesting reflex relation is that of the genital organs upon the upper air passages. Dr. J. N. Mackenzie has given some very valuable information on this subject in a paper entitled "The Physiological and Pathological Relations between the Nose and the Sexual Apparatus of Man." An immense amount of research is displayed in this paper, and plenty of evidence is given to show that the venous and nerve supply of the nose are markedly influenced by the generative organs in either sex. Excessive venery has been the direct cause of hay fever, asthma, hypertrophic rhinitis, and perversion of the olfactory sense.

The text-books on general medicine speak of the nose and throat manifestations of the exanthemata, typhoid, scurvy, rheumatism, eczema, syphilis, tuberculosis, diphtheria, etc. Bishop lays considerable stress on the uric acid diathesis being at the bottom of many catarrhal conditions.

Wells has gone very thoroughly into the relations of the skin and the upper air tract, and shows conclusively that the nose suffers severely when the skin is not doing its

duty. Hajek of Vienna said: "Unless one has devoted a certain amount of time to dermatology, he is not competent to intelligently diagnosticate the diseases of the nose and throat."

With this partial review of the relations of the general system to the upper air passages, what path is shown to the specialist in this line? To quote from an editorial in the *Laryngoscope:* "The fact remains that surgery should be employed to as little an extent as is compatible with the abnormalities present in the case; then local constitutional and hygienic treatment must be depended upon to remove the *cause* of the disease. Removal of the *result* does not materially affect the *cause*." Diathesis cannot be eliminated in a day.

Attention will be called to some of the directions in which hygienic measures will assist in relieving troubles in the upper air tract, where surgical interference will not cure. From the public point of view this takes up the questions of ventilation, sewage, heating, dust, noxious weeds, pure foods, etc.

Many public and private buildings are very poorly supplied with fresh air. Nothing is so trying to the mucous membrane of the nose as its attempt to render superheated and foul air fit for entrance to the lungs. Hypertrophy is produced and greatly aggravated by such efforts. Many children with slight adenoids are in excellent condition during their summer vacation, with its outdoor life, but as soon as they are shut up in the poorly aired schoolroom they find difficulty in free breathing and, in consequence, have headaches and kindred symptoms. Our modern houses are an improvement over those of European nations, but there is a great danger in having the living rooms too warm and the air too dry.

Another source of much discomfort is the large quantity of dust and soot in the street air, especially in the cities. It is the duty of every community to have its streets as clean as possible, and to oblige manufacturers to prevent the

smoke nuisance. When the automobile replaces the horse, the main source of our uncleanly streets will be obviated.

It is generally believed that the rag-weed and golden-rod are the chief causative factors of hay fever in the predisposed. These weeds are of no value in the human economy, and the day should come when legislation will compel the public to destroy, in so far as possible, any weed apparently injurious to health.

The food question is both of public and private interest. It ought to be possible for one to obtain pure food products, and the laws should be so rigidly enforced that a label on any food should tell the exact truth as to its purity.

As before suggested, obstruction and congestion in the portal circulation bear a direct and marked relation to the congestion in the mucous membrane of the nose and throat. Pure, healthful foods, properly prepared and thoroughly masticated, will prevent and cure indigestion and its accompanying ills, other things being equal. Pork, veal, fried foods of all kinds, pastry, hastily cooked cereals, condiments, coffee, tea, and new bread are not good foods for anyone. A number of students coming under the writer's care have found their catarrhal tendency much lessened by rejecting some of the articles on the boarding-house menu, and by taking more time for eating. Of course, a man who works hard out of doors will digest almost any food, but in the long run it is at the expense of his stomach and its helpers. The Jewish race is proverbially a healthy one, and there is no shadow of a doubt that it is due, to a very large extent, to their custom of not eating pork. Tuberculosis, which claims so much attention from the nose and throat specialist, is rare with the Jews. There is absolutely no other ground for argument why the Jews are so exempt from tuberculosis, than on that of abstaining from the use of pork, for a large class of them are otherwise unhygienic. Tobacco and liquors dry and engorge the membranes of the upper tract both directly and reflexly. A man who is engaged in a sedentary occupation must be more careful in

eating than one who has plenty of exercise. Meat once a day for any indoor man is enough. Beans and peas contain the same kind of nourishment—in larger proportion—as meat, are cheaper, and, if well cooked, more easily digested.

Exercise is a prime factor in aiding digestion and keeping all the eliminative organs in active condition. The writer has a patient who is a teacher. Throughout the school year he suffers greatly from congestion of the nasal mucosa, but during his vacation of hunting, fishing, and camp life, he throws off his catarrhal condition entirely. Mulhall tells of two prizefighters who were subject to hypertrophic rhinitis when not in training. After a course of work in preparation for a match, their bowels become regular, the skin soft and smooth as satin, and all congestion in the nasal mucosa disappears, leaving no trace of the former need of hawking and spitting. The same author recommends sawing wood, in the old-fashioned manner, as a most excellent form of exercise. This gives the kneading action to the diaphragm and bowels, which relieves the portal, and reflexly the nasal, congestion.

Next in importance to exercise is bathing. Someone has said that the skin is the external organ of respiration, and if it is healthy and active, there is less likelihood of taking cold in the varying changes of weather. By the cold bath the system is made more tolerant of draughts and sudden exposure, by teaching the arterioles to expand and contract readily. The skin is not really toughened by the bath, but the glands are kept sweet and clean and the eliminative function is given free play. A pair of loose, thumbless mittens, made of heavy Turkish toweling, are the most convenient for a cold bath. Then with both hands one can quickly and thoroughly go over the whole body. This should be immediately done upon getting out of bed and followed by a brisk rub, the whole process not occupying over three minutes. If one is strong enough to enjoy it, a shower or plunge is excellent. The cold bath should be begun in early life.

In this connection might be mentioned the great benefit

of cleanliness and antisepsis in some nasal diseases, as hay-fever. The writer has had very satisfactory results in a violent hay-fever by daily thoroughly cleansing the nose with a mild antiseptic during the period of attack. Nothing else ever gave this patient such relief. Hollopeter cites two hundred such cases with astonishing results.

No hard-and-fast rules can be laid down about clothing. Some cannot wear wool, while others do better with it. According to the variations in the weather the clothing should be changed. Regularity in eating, sleeping, and exercise is the salvation of many men.

This paper was not written to decry necessary surgical work, but rather in the hope that it might diminish the reckless destruction of the mucous membrane of the upper air tract. The turbinated bodies are very useful, when not maltreated by disturbing influences in other parts of the body. Homeopathic remedies will help restore crippled functions, when combined with proper hygienic living. Would that it might be said of the members of this Society that they make it their first business to correct the wrong methods of living, and that they resort to surgery only in cases where it is needed.

A CASE OF CHRONIC NERVOUS CATARRH.

BY E. D. BROOKS, M. D., ANN ARBOR, MICH.

THIS paper presents nothing new or startling. Simply the extension into (perhaps) new fields, of well-known methods, with gratifying results.

Mrs. M., age forty-three, wife of a teacher, intelligent and refined, came to me December 3, 1898, giving a history of attacks, at irregular intervals, and extending over a varying period of time, since childhood, of sneezing, lachrymation, obstructive swelling of the nasal passages, and profuse, fluent, watery discharge from the nose; attacks closely simulating hay-fever, yet lacking the ear-marks of a typical case, in that pollen or the odor of certain flowers would not bring on an attack, nor was it confined to any season of the year nor was any season exempt; neither did a sojourn in localities considered unfavorable to its development prove beneficial. It was of the nervous type, for excitement would often precipitate an attack.

When she came to me, in early December, she had been suffering for six weeks from the severest attack in all her experience, and had exhausted all the expedients learned from former medical attendants to no purpose, and looked and felt worn, haggard, and emaciated.

The most severe paroxysm occurred in the morning on rising, probably from a change of temperature; several, less severe, occurring during the day; another hard one on retiring and several during the night, disturbing her sleep and making life a burden. From twenty to thirty handkerchiefs, cloths, and towels were saturated during the twenty-four hours.

She had been constipated since childhood, and never had a stool except as artificially induced.

The inferior turbinals were hypertrophied, crowding the septum and the floor of the nostrils; the whole nasal mucous membrane was hyperæsthetic to a marked degree, and the slightest manipution caused a sudden and profuse flow of water from eyes and nose.

My prescription was ars. jod. 3x, massage of the Schneiderian membrane and application of camphor-menthol five per cent. in albolene, followed by a coating of aristol powder from a powder-blower. Local treatment to be made three times per week.

The purpose of the local treatment was to overcome the hypersensitive condition of the membranes by manipulation and astringent applications. Probably zinc sulph. or silver nitrate would have answered the purpose quite as well as the camphor-menthol and aristol, but the procedure that kept the patient reminded that something was being done for her was the massage, which was accomplished as follows: A flattened uterine cotton-carrier was thinly wrapped in dry absorbent cotton, introduced as far back in the nose as practicable and, by a rapid side-to-side vibration of the hand, caused to pat and press every accessible portion of the Schneiderian membrane; wrapping the probe more heavily for the wider and more thinly for the narrower portions of the cavity, and changing the cotton as often as it became saturated or befouled by the secretions. At first only very small areas could be thus treated, and that for a brief space of time, and with the utmost gentleness, but, as the membrane became more tolerant of manipulation, the area was extended and the duration and severity of the treatment augmented as rapidly as could be borne.

For the first week or ten days each treatment was followed by an aggravation of the symptoms, like that following the administration of a too large dose of the homeopathically indicated remedy, succeeded by a gradual lessening of the malady until another treatment aroused the demon and gave him another shove toward the door of exit; but, as the membranes became more tolerant, these aggravations gradually lessened and then disappeared altogether.

Similarly the distressing symptoms gradually abated, the attacks diminished in frequency and severity, then the nightly seizures disappeared, giving her opportunity for sleep, then the attacks during the day ceased, next that occurring on retiring

and, last of all, the morning attack made its exit and the battle was won, leaving only a stuffy sensation in the nose which quickly yielded to sambucus nig.

Up to the time of prescribing samb., ars. jod. and nux vom. had been my main reliance as remedies, and now arises the question, Would not samb., or either of the other remedies given during the two months' treatment, have performed the cure without the use of the accessory means? I don't know. I leave that for specialists in materia medica to answer. For myself, I always use what seems to be the indicated remedy and complement it with such local measures as I judge will promote the cure of the patient.

About a month after she considered herself cured there appeared a slight sense of tingling in the nose and inclination to sneeze, and, dreading a recurrence, she applied for a prescription and received ars. jod.

Sufficient time has not elapsed to demonstrate the permanency of the cure, and she will undoubtedly require an occasional ℞ to prevent a recurrence of her malady, yet she feels and looks very comfortable and content with her physical condition.

The hypertrophied turbinals remain somewhat reduced in size, but are not producing pressure. I am not sure, now, that their reduction by operative measures, which I at first strongly advised, would have materially contributed to the good result secured.

While I am of opinion that some orificial work done on the lower bowel would be helpful to her in many ways, I cannot, as yet, persuade her that she needs it, since she is in so much better health than formerly.

While intra-nasal massage may have been used in some cases in the treatment of hay-fever or nervous catarrh, it has not yet arisen to the dignity of a standard mode of procedure. Nor has my experience with it been extended enough to enable me to base any conclusions upon it. That I had found it very helpful in cases of atrophic rhinitis, led me, by a process of reasoning, to presume that

it might prove beneficial in hypertrophic forms, which are recognized precursors of the atrophic.

To what extent the massage was helpful in this case is problematical, as is true of all the other means used. The mental effect was certainly good and we all know how important a factor that is; then, as the tissues were unloaded of their superabundance of blood by the process, the engorgement, which is always present in hay fever, was quickly relieved, adding very materially to the patient's comfort, affording a grateful sense of relief, and encouraging the patient to continue a course of treatment, which, but for that, would be irksome enough.

THE CORRECTION OF SLIGHT ERRORS OF REFRACTION.

BY L. Y. BAKER, M. D., WASHINGTON, D. C.

MANY times in the course of my work I have met with patients who have exhibited symptoms of a character more or less grave, which I have been able to relieve by the proper correction of existing refractive anomalies of slight degree, and I have also had occasion to remark on the tendency to overlook these slight errors, which tendency is to the detriment of both patient and physician.

We have, in this connection, what Dr. Ranney pleases to call "a run on the nervous bank" to nearly, if not quite as great an extent as though the surplus nerve energy were used in the attempt to procure binocular single vision in heterophoric conditions. And why not? The error is so small that the effort to see distinctly is often rewarded by success, and this effort, constantly applied through the ciliary muscle, is as great a nervous drain as though applied through any of the external ocular muscles. The strain is naturally greater, I find, in the more robust subjects, and up to a certain point as the error of refraction is greater, beyond which clear vision cannot be obtained; therefore no effort is made and no strain or waste of vital force is present.

We see this frequently in cases of myopia where the error ranges from —2 D. to — 5 D. without any marked inconvenience. As a rule it is discovered in school children who cannot see the blackboard unless allowed to get nearer it.

Small degrees of congenital myopia, however, rarely give rise to any uncomfortable symptoms, for the early years of life are spent in near work, where, if anything, the near-sightedness is an assistance; and these cases are apt to develop the brighter students, from the fact that less strain and greater comfort is present during near work, and love of study is the result.

The boy who always wants to get out of doors, hates study and is always ready to play "hooky," is either an emmetrope, or more frequently a hyperope, if all moral and mental qualities are equal.

In anisometropia, where one eye is emmetropic and the other of fairly high error, the error is often not discovered until the emmetropic eye becomes presbyopic, and not always then, for the erring eye may have been myopic, and under those circumstances the work is gradually shifted from one eye to the other.

As a rule, then, the cases which most concern us are those of slight astigmatism or slight hyperopia or a combination of the two. Heterophoric conditions will also give rise to symptoms of the same nature and the differential diagnosis must be carefully made.

Symptoms elicited by small refractive errors are numerous, but by far the most frequently met with is headache, which, as to location, is either supra-orbital or temporal.

Another symptom by no means rare is blepharitis or blepharal conjunctivitis, and its frequency seems to increase as the pigmentation of the subject decreases. In other words, light-complexioned persons are more liable to this symptom than those of darker skin, and its tendency decreases as the pigmentation (or brunette type) increases. I am speaking now solely of blepharitis the symptom, and not of blepharitis the disease—a distinction often overlooked, and the source of the trouble allowed to pass uncorrected.

Nausea I have often seen as a symptom of uncorrected "minor" errors, and as a result, disgust for food, poor appetites, badly nourished bodies and retarded growth.

Another, and I shall call it symptom, is what has been diagnosed epilepsy or frequently "fits," although not of the genuine character.

These are a few of the symptoms seen which result from small refractive errors. There are others of greater or less import, but those enumerated will, with the assistance of the following cases, show the value of correcting these small errors.

First then, of headaches: Many illustrations might be given as the cases are numerous, but, as they are frequently seen and the cause often easily recognized, but one case will be necessary.

Mrs. T., aged thirty-eight.—Vision O. D. 20/20, O. S. 20/20. Persistent and intense headaches, supra-orbital. No lens seemed to help, but under atropine I found a hyperopic-astigmatism of .25 D. with the axis 90°—both eyes. These glasses were prescribed to be worn constantly, with the result of an entire subsidence of the headaches.

Two years later the patient returned with the same symptom as persistent and as intense as before. Examination showed no error, and the use of the glasses was ordered discontinued. The headaches ceased and now, at the end of four years, have not reappeared.

As to the symptom, blepharitis, here also many cases could be given—one case, however, will illustrate.

Benj. M., aged nine years, came to me because of his eyes paining and the lids agglutinating. A marginal and conjunctival blepharitis seemed to be responsible for the difficulty, as I could find on superficial examination no refractive error. I treated the lids for some time, both locally and internally, along the well-trodden therapeutic route, but to no purpose. I then placed the eyes under atropia and found O. D. + .25 Dc. 90°. O. S. — .25 Dc. 180°—which correction I prescribed, and the constant wearing of the lenses was followed by a rapid subsidence of the annoying symptom.

Nausea and its concomitants is less frequently noted, but a clear-cut case will illustrate.

A. S., female, aged nine years, was under my care for other troubles for some time. During the latter part of the treatment it was remarked that whenever she studied or read she felt sick at the stomach. She had very little appetite, was small for her age, thin and pale.

Examination under atropine showed an uncomplicated hyperopia of .50 D. which correction was prescribed to be worn constantly. The nausea disappeared, and she developed a good, healthy appetite and commenced to take on the natural amount of flesh. She is now, at the end of two years and at the age of eleven, somewhat above the average height, I should say about the average for a child of thirteen, and of a well-rounded figure.

I might say that her mother was rather under, and her father just about the average height. She is now 1½ inch taller than her thirteen-year-old brother.

Of the last symptom as I have called it, or what in two of the three cases which I shall give was diagnosed epilepsy, cases are less frequently encountered, but they are cases the successful treatment of which is sometimes startling to the uninitiated in its result.

Case I.—C. B., male, aged nineteen, has been subject for some time past to falling down on account of muscular collapse, especially when confused ; at such times as when walking on the street when much traffic is passing.

Health seems perfectly good. Examination showed hyperopic astigmatism .50 D. axis 90°—both eyes. The use of this correction was followed by a complete disappearance of this annoying symptom, which, at the end of five years, has not reappeared. No other treatment was given.

Case II.—M., female, aged nine years, has periods of trembling which cannot be controlled. Often the legs seem to give way beneath her and at other times she falls backward. Had received a course of treatment for chorea but without benefit. I saw the case in the general clinic of the Dispensary, and suggested an examination of the eyes. There existed an hyperopia of .50 D., which was corrected by a spherical lens of that strength. The lenses were worn constantly, and all symptoms disappeared and had not returned one year later.

Case III.—Mr. H., aged forty years, had been wearing glasses

for some time and thought he needed a change. Examination showed hyperopic astigmatism in both eyes, the correction of which was O. D. + .50 Dc. axis 80° ; O. S. + .50 Dc. axis 110°. I have forgotten what glass he was wearing when I first saw him, but remembered that I changed both the glass and its axis.

His physician some time later said to me "You made a great hit in that case." I asked him how, and he said that the patient had been subject to epileptiform attacks at intervals of from three or four to ten days, but had had none since his change of glasses and that his headaches had all ceased.

This was news to me, as nothing had been said about it by the patient.

I saw the patient again three years later. His eyes had pained him during the summer while I was away on my vacation, and he had also had one or two of his old attacks. A change of glasses at that time had been followed by an increasing frequency of their appearance.

The change had consisted of increasing the cylinder to .75 D. and changing its axis to 90°.

I gave a prescription for his old cylinder, but combined with it a + .50 D. sphere to cover the presbyopia.

Six months later he came to me again. He had had more of his old attacks, and an examination of the glasses showed that he had had new clips put on, which had resulted in a drooping of the lenses, so that the axes were 95° and 85° instead of 80° and 100° in the right and left respectively. The fault was corrected and I have not seen him since that time.

A CLINICAL NOTE.

BY W. A. PHILLIPS, M. D., CLEVELAND, O.

IT is within the observation of every well-regulated oculist who has been long in practice that he often comes in contact with optical defects which demand something more than optical correction in order to accomplish a cure. When it is possible to secure perfect correction by means of skillfully selected lenses, and when there is no appreciable want of co-ordination of the extrinsic muscles, it is rarely the case that all of the symptoms complained of do not promptly disappear by the use of the glasses alone. But there are in general two classes of cases in which this happy result is not experienced:

First. Those cases in which the influence of the strain imposed upon the ciliary muscle has impaired its tone: and

Second. Those cases in which the tone of the entire muscular system of the eye is impaired by more or less serious disturbances in other parts of the body. In these cases, too, it is not unusual to encounter a persistently irritable condition of the retina.

In these cases it is especially important that the greatest pains be taken to arrive at a diagnosis that shall, if possible, be beyond question. For it is along this line of cases that we sometimes doubt too profoundly the efficacy of medicines: when it is perhaps too often true that the fault lies more in overlooking the remote causes of the trouble than it is in the power of medicines to give relief, provided an accurate correspondence of symptoms and pathogenesis

can be found. It is here that oculists and general practitioners have common ground, and neither can do his best work without the aid of the other. The writer, however, is impressed with the (seeming?) fact that general physicians do not fully appreciate the gravity of eye troubles due to constitutional affections, nor the degree and kind of aid it is possible for oculists to render in this class of cases.

This was recently shown to be the state of affairs by a criticism offered by a prominent Boston physician who expressed surprise—not to put it too strongly—that oculists were not indicating more definitely to physicians exactly what they should use in diseases of the eye. Why should a man of wide experience take a more narrow view of eye diseases than he does of any other class of diseases with which he is more familiar? As well might he indicate to a brother practitioner exactly how a case of pneumonia or typhoid fever should be treated from start to finish without consultation or doubt of his doing precisely the right thing at the right time. Eye diseases are as variable as diseases of other structures and no hard-and-fast directions can be systematically laid down that will not require modification according to the increase or subsidence of symptoms or the development of new ones. The greatest difficulty that an oculist encounters in attempting to instruct physicians in the use of internal remedies in affections of the eye is that of imparting a knowledge of differential diagnosis right on the spot. Symptomatology is good as far as it goes; but pathology and causes are by no means to be ignored in making up the composite picture. The great similarity of the symptoms to be found in different diseases of the eye, and the nice points often to be distinguished in order that the diagnosis may be correct, constitute a painstaking investigation of many cases that a general practitioner cannot conduct. How then in default of this shall he be instructed just what remedies to administer without more or less immediate attention on the part of the expert? Another point steadily to be borne in mind is that the severity of diseases depends in great measure upon the

delicacy of the structures invaded. This in turn modifies the curative action to be derived from medicine. In other words, the more delicate the tissue the more rapid the changes, and the sooner it loses its nutrition and function and the less the time for the exhibition of the properly considered remedy. It is plain, then, that in order to secure the best results in all cases where the eye symptoms depend upon constitutional disturbances, a close relationship should be established between the physician and the oculist and all changes promptly and carefully noted. Certain cases are said to be typical; but for all that, each case demands to be individualized, and will commonly be found to have peculiarities of its own. In regard to the first class of cases, when the ciliary muscle itself seems to be the special seat of trouble; when its muscular tone is disturbed from previous straining; and when inability is present after using the eyes for reading any considerable time, notwithstanding optical correction; in cases of this kind, I desire to call attention to the use of rhus tox.

There is really little in the provings, or in recorded clinical observation, to indicate that this remedy has any particular sphere of action in this class of cases. The nearest approach to a hint in this direction is the recommendation of its usefulness in a lameness or a soreness arising from getting wet, or from rheumatism. It is not an unimportant hint, for it is not at all impossible that the molecular disturbances may be substantially the same. At all events, I have employed this remedy in cases of the kind pointed out frequently enough and with apparently good results enough to justify calling attention to it.

We are all not unmindful of the fact that it takes a large number of cases, carefully noted, to prove anything definite in the field of clinical experience. If my observations are verified, or if they are not, in either cases we shall learn *something;* for it is well known that valuable clinical observations do not always correspond with the record of provings as we have them, and hence clinical experience has an important place.

OPHTHALMIA NEONATORUM, WITH A BRIEF REPORT OF FIFTY CASES.*

BY L. W. SNOW, M. D., SALT LAKE CITY.

THERE are certain features of the subject of ophthalmia neonatorum which concern the general practitioner perhaps to a far greater extent than the specialist, from the fact that he can employ prophylactic measures with the most happy results, having the assurance that the disease can be robbed of its dreadful results, if indeed it cannot be entirely prevented by his timely efforts.

This disease is a form of purulent ophthalmia usually of gonorrheal origin occurring in the newborn. It is an inflammation of the conjunctiva characterized by marked swelling of the lids with infiltration of the conjunctiva and a purulent infective discharge.

It usually occurs by the smearing of the child's eyelids with vaginal and urethral discharges during the passage of the head through the vagina. As soon as the eyes are opened they become inoculated with any gonorrheal virus that may be contained in the discharge. It has occasionally been observed that a very slight and old-standing gonorrheal discharge is responsible for a very acute and severe gonorrheal ophthalmia, either in the case of an infant or that of an adult. It is generally conceded that the majority of cases, and especially the more severe forms, are due to the presence of the gonococcus as discovered by Neissen in 1879.

Magnus and Fuchs have reported cases in which infec-

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tion appears to have taken place *in utero.* These cases, however, are extremely rare. In the light of recent investigation, there can be no doubt that other microbes aside from the gonococcus give rise to a purulent inflammation of the conjunctiva closely resembling if not identical in its clinical features with the disease caused by this particular germ. Morax and others found the pneumococcus in the discharge of ophthalmia neonatorum, and it has also been observed in ulcer of the cornea with hypopyon. The gonococcus is generally present in the secretion, being specially numerous during the muco-purulent stage.

The disease may occur in the absence of a virulent vaginal discharge in the mother; a slight muco-purulent discharge may be responsible for it and careless bathing with sponges or towels soiled with a vaginal discharge may be the means of conveying the infection.

There appears to be a relation between the temperature and the disease. In cold climates ophthalmia neonatorum is especially frequent in the summer months; in the hot countries in the spring and autumn.

The disease generally begins about the second or third day after birth as a redness and swelling of the lids of the infant accompanied by a more or less purulent discharge. When resulting from a secondary infection, from soiled fingers or sponges, it may make its appearance at a much later date.

Almost always both eyes suffer, although one may be earlier and more decidedly affected than the other. The symptoms increase usually with great rapidity till the lids become enormously swollen with intense chemosis of the conjunctiva. The surface of the swollen lid is hot, dusky-red, and tense. The tissues in infancy being quite lax allow a more pronounced swelling. The pain is severe and the discharge at first slightly turbid, but soon of a greenish-yellow pus which is secreted in great quantities. During the first two or three days of the disease the conjunctiva presents a swollen and velvety appearance, with flakes of lymph upon its surface. Marked chemosis and infiltration

of the ocular conjunctiva follow, forming a hard ring around the cornea. The thick, creamy pus increases in amount, fills the culs-de-sac, and forces its way between the distended and adherent lids.

All cases are not of this intensity, the severity ranging from the most virulent down to the mildest cases of a muco-purulent type. All cases begin, however, in essentially the same manner. A mild form of catarrhal conjunctivitis occasionally begins two or three weeks after birth, and while it has a tendency to become chronic it is seldom specific, and if properly treated need cause but little anxiety regarding corneal complications. In some cases, owing to the great swelling, the upper lid hangs down over the lower, and it is almost impossible to expose the cornea. As the great danger of the disease lies in its involvement, every effort should be made to inspect it. Constant contact with this purulent matter gives rise to a maceration of the anterior surface of the cornea, allowing the microbes to enter, multiply, and impair or destroy its transparency. Great gentleness is very necessary in all examinations to prevent an abrasion.

As symptoms of greater severity begin to subside, the lids become less tense and can be more easily everted. The conjunctiva is puckered into folds, and the discharge contains more serum. The discharge generally lasts from four to six weeks, leaving the conjunctiva thick and granular, not unlike granulating tissue, rendering it very susceptible to other diseases, such as trachoma and the diphtheritic forms of conjunctivitis. A slight muco-purulent discharge of a chronic character is not infrequently present.

The chief danger to be apprehended in this disease is destruction of the vitality of the cornea, which complication usually occurs during the first few days of the disease. It is often preceded by a dull, hazy condition of the cornea, and usually manifests itself as an ulceration, either with clear outlines or yellow edges, and is apt to extend with rapidity, and occasionally the whole cornea is involved. In some cases the pressure of the thickened conjunctiva

around the cornea is so great as to destroy the channels of nutrition, resulting in total loss of the structure. A steamy condition of the epithelium is observed, and the tissues melt away with astonishing rapidity. Nothing but the membrane of Descemet remains. Occasionally the destruction is so complete that rupture occurs and the lens escapes.

After a corneal ulcer has formed, the result is healing with regeneration of the corneal tissue, or else perforation occurs. The result of perforation will depend largely upon its position and the amount of destruction of the corneal tissue. When it is near the center of the cornea, the aqueous humor escapes and the lens is forced against the opening, which is generally occluded with lymph. When the aqueous re-accumulates, the lens may assume its former position and the particles of lymph adhering to it occasion a pyramidal cataract. Should the perforation occur in the periphery of the cornea, the iris is forced into the opening as the aqueous escapes, and becomes adherent by the resulting inflammatory exudation. The region of the scar may be unable to resist the intraocular pressure, when a bulging forward occurs, giving rise to an anterior staphyloma.

Perforation may give rise to inflammation of the ciliary body and choroid, resulting in panophthalmitis and a shrinking or destruction of the eyeball.

Prophylaxis is of the highest importance in the treatment of this disease, and isolation should be practiced whenever possible. With very few, if any, exceptions the infection comes from the vagina of the mother, which fact is demonstrated by the measures which have been employed for its prevention and cure. The success of these is one of the greatest triumphs of modern scientific medicine. This is one of the diseases for which it is claimed that absolute prevention is possible and that with proper precautions there need never be another case of destructive ophthalmia neonatorum.

According to Professor Magnus of Breslau, of all who become blind during the first year of life 71.99 per cent. are rendered so by this disease. Thirty per cent. of the

inmates of blind institutions in Great Britain have lost their sight from this cause. Fuchs, Magnus, and others claim that more than one-quarter of the blindness of the civilized world at the present time is caused by this disease. This blindness begins with life itself, and so impairs the usefulness, of the person afflicted that instead of being a producer and a benefit to the community, he is a consumer only and a charge upon the public for the whole of his life. The last census showed more than fifty thousand blind persons in the United States, and it is not unreasonable to conclude that about fifteen thousand persons are to-day living in darkness, and many of them helpless, owing to the disease ophthalmia neonatorum. Had proper measures been employed, these persons with few exceptions might have been blessed with sight and become useful members of society. Could we estimate the financial loss to the community from this disease, it would run up into the millions annually, and the loss from the moral and humanitarian aspects are too appalling to need further comment.

Howe's statistics show that, owing to the carelessness of the emigrant population of this country, blindness is on the increase, hence the prophylaxis and treatment of this affection are of vital importance.

The disease being one of infection from a source thoroughly recognized, its prevention is of practically absolute certainty. To Professor Crede of Leipsic is due the honor of having demonstrated this fact, which was brought before the profession in 1882. Before the adoption of his methods the percentage of ophthalmia neonatorum in various lying-in institutions ranged from 19 to 4 per cent. Now in the same institutions, since the introduction of his methods, it has been reduced to .2, and even this can often be attributed to neglect or carelessness of the attendant. Crede's method consists in first wiping the eyes of the newborn child and then dropping into the conjunctival sac a drop of a two per cent. solution of nitrate of silver. The reaction that follows is usually very slight and requires no treatment, although occasionally it is

necessary to apply cold applications with cocaine and atropine. Some persons consider the above prophylactic treatment rather harsh, and object to its employment as a routine procedure in private practice. The least that can be expected of the attendant is to see that scrupulous cleanliness is employed during the birth of the child, to give close attention to its eyes, have them carefully cleansed with an antiseptic solution, and should any symptoms of ophthalmia develop, to begin active treatment immediately. Careful attention to the vagina previous to and during parturition will reduce to a certain extent the dangers of this disease, but it is practically impossible to render a septic vagina perfectly aseptic.

Most of the European governments, and no less than twelve States in our own country, require by law the reporting of all cases of ophthalmia neonatorum to the authorities. It is to be hoped the remaining States will enact similar laws. The laity should be instructed in regard to this disease till they realize that what has been considered a simple cold in the eyes may mean a destructive disease resulting in blindness unless promptly treated by a competent physician.

When but one eye has been infected care should be taken to protect the other eye. This may be washed out with a weak antiseptic solution,—nitrate of silver being the best,—covered with a pad of antiseptic cotton, and hermetically sealed by a bandage.

Strict attention to cleanliness must be given during the whole course of the disease. In the early stage, when the lids are hot and swollen, cold applications in the form of pieces of lint that have been laid on ice may be used in certain cases with advantage. Should the cornea be implicated care must be taken that its vitality is not impaired, and a very low temperature must never be maintained in any case. A bladder or an ice-bag should never be applied immediately to the eyelids. Hot fomentations are often very serviceable, especially when complications of the cornea exist.

Scarification of the swollen conjunctiva is occasionally

resorted to with advantage. When the swelling of the lids is so great that the cornea cannot be examined, it is necessary to divide the outer canthus to the edge of the orbit, including the orbicularis muscle. A pair of strong scissors is the best instrument for this purpose. This relieves the pressure on the cornea and enables one to treat the eye in a more satisfactory manner.

In the early stage nitrate of silver seems to aggravate the disease, although it has been advocated by some. Later, however, when free discharge is established, it is the very best remedy with which we are familiar. While it acts as an antiphlogistic in a certain sense, its chief value is exerted as a destroyer of the infecting germ. It destroys the epithelial layer of the mucous membrane and with it the germs which it harbors. A solution of 10 grains to the ounce may be brushed over the conjunctival surface once daily. When the secretion is scant, a solution of from 2 to 5 grains to the ounce may be applied twice daily. In very severe cases the strength may be 30 or 40 grains to the ounce, but should not be applied more than once daily. In some cases the mitigated stick may be employed with advantage, but in the use of this or the stronger solutions the excess must always be washed away with a weak salt solution.

Protargol, a chemical combination of silver with a protean substance, promises to give good results in this disease. Dr. F. E. Cheney of Boston has used it in twenty-five cases. It appears to be less irritating and equally as effective as the nitrate of silver.

The eyes must be kept thoroughly clean with an antiseptic solution. The perchloride solution of 1–5000 is perhaps the best. The lids should be very gently separated and the warm solution, squeezed from absorbent cotton or lint, allowed to run over the exposed surface. This cleansing should be repeated from every fifteen minutes to two or three times daily, depending upon the amount of discharge and the severity of the disease.

The most dangerous complication of this disease is

involvement of the cornea. At the first appearance of corneal haze, a solution of atropine 4 grains to the the ounce should be dropped into the eye once or twice daily. If there is danger of perforation of a marginal ulcer it is better to use eserine.

By careful treatment some cases that appear almost hopeless will be conducted to a favorable termination.

While at Moorfields (the Royal London Ophthalmic) Hospital, I had the privilege of observing and treating a large number of cases of ophthalmia neonatorum.

The treatment of these cases was about as follows: A solution of nitrate of silver 10 grains to the ounce was brushed over the conjunctival surface of the lids daily (Sundays excepted) at the hospital. When the lids were inclined to adhere and prevent the free escape of the discharge a boric-acid ointment was applied night and morning by the nurse or parents. A solution of perchloride 1–4000 was applied two or more times daily and the parents instructed to keep the eyes clean and informed that the discharge would probably cause blindness if it found its way into the eyes of another. Atropine was employed in corneal complications.

Thinking it might be of interest to know the frequency with which purulent ophthalmia resulted in the families in which these cases existed, I concluded to make careful inquiry in a number of cases. From the 1st to the 14th of October, 1898, I questioned the parents, nurses, and others who brought these infants to the hospital for treatment, making inquiry in fifty of the cases treated by me during that time.

All cases in which the disease was of less than ten days' duration were excluded, as were also all cases of purulent ophthalmia in children in which the disease could not be traced to within a few days of birth.

The above fifty cases represented fifty families, and in but one instance was I able to trace a case of infection to another. This case occurred in a child a few years of age in a family with an infant suffering with ophthalmia neona-

torum, and the presumption is that the child became infected from this source. I was somewhat surprised to find but one instance in fifty cases of the disease in which infection had occurred.

Piringer has made some interesting researches relative to the infective material and the ophthalmia produced by it. The infective power of the secretion is weakened by dilution, and when diluted with one hundred parts of water it is rendered inert. Secretion that has been dried on a porous surface like linen loses its activity after thirty-six hours. As the virulence of the infecting secretion is weakened, the period of incubation increases in length and the inflammation excited grows milder.

Fuchs, who has an excellent opportunity of observing the disease, from the large number of cases occurring in Vienna, says: "The transfer of blennorrhea from an eye affected with the latter to the eyes of other people is likewise not rare. It occurs most frequently in children who are affected with blennorrhœa neonatorum and thus infect their mothers, nurses, etc. In the Vienna Foundling Asylum during the years 1812 and 1813 there were for every hundred infants affected with blennorrhea more than fifteen nurses so affected who had acquired their eye disease from the infants. I have seen a whole family infected with blennorrhea by a child having blennorrhœa neonatorum, and thus plunged in the greatest misery."

I cannot recall a case in which a nurse at Moorfields was infected during the time I was at that institution. There were none infected during my services in the surgery, covering the treatment of several hundred cases. The nurses usually wore a pair of large spectacles as a protection to the eyes. From the above I can only conclude that the treatment employed reduced the danger of infection to a very great extent. While the danger is reduced to a minimum by proper care and treatment, it is still so great that every possible care should be taken to prevent the attendant and others becoming infected.

I saw two cases of purulent ophthalmia in nurses from

the Bethnal Green Infirmary who became infected from cases of ophthalmia neonatorum. The first case had been on duty between four and five months in this department, where from fifteen to twenty cases were treated daily. She had been off duty about two months, being under my care at Moorfields for this disease, when another nurse, who had temporarily taken her place, became affected in the right eye. There was a purulent discharge of four days' standing when she presented herself for treatment.

Moorfields Eye Hospital, at which these fifty cases were treated, is not far from the Whitechapel district, and a considerable number of patients were from that part of London; so that the hygienic surroundings were neither favorable to the best success in treatment nor to the prevention of its attacking other members of the household. I believe the results are due largely to the nitrate of silver and the perchloride of mercury employed in the treatment of these cases.

In thirty-two of the above cases the cornea was involved, from a mere faint nebula to a rupture with the escape of the lens. Rupture of the cornea occurred in four cases—two of which involved both corneæ and two a single cornea. Rupture occurred in one instance two days after treatment began, and in all the remaining cases previous to their appearance at the hospital. Atropine was used in the cases of corneal involvement with very few exceptions, one being a case of microphthalmus in which eserine was employed. A dense leucoma of both corneæ in one case, with the two cases of double rupture of the cornea, would give us three cases of blindness in the fifty treated. In one case rather a dense leucoma had so far cleared that the patient would perhaps have good vision. The external canthus was divided in three cases, to relieve the pressure on the corneæ and enable the treatment to be more effectually employed.

The above cases would not in my opinion represent the average types of the disease. The hygienic surroundings of the majority of the patients were most unfavorable.

Some mild cases were perhaps never recognized by the attendants and parents, and therefore never treated. A considerable number of cases were treated during the whole course of the disease by the attending physician; other cases were sent to the hospital when observed to be severe, or after complications had developed. I not infrequently saw cases in which the cornea was completly destroyed before the infant had received any treatment.

It is very gratifying to observe rather dense opacities to clear up in some cases by careful treatment.

DISEASES OF THE FRONTAL SINUSES AND ANTERIOR ETHMOIDAL CELLS.

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TO consider all the accessory nasal sinuses would require too long an article to be presented at one time. Therefore, we have selected the subject of this paper, because the antra and their diseases are better understood, while the sphenoid and posterior ethmoidal cells are far less frequently diseased, or, at least, less frequently recognized.

The frontal sinus and anterior ethmoidal cells are considered together because of their very intimate anatomical relation, which will be recognized when we study the anatomy of these regions. We shall also see that it is difficult to make even this division clinically, because the antrum is so closely connected with the above cavities. Upon this point Zuckerhandl says he has never found these conditions (frontal and ethmoidal disease) uncomplicated in autopsy examinations. In 146 necropsies, E. Frankle found none unassociated, while Luc and Jansen consider they are usually co-existent.

The frequency of simultaneous frontal and antral sinusitis may be judged from the following: Jansen found six out of seven cases diseased simultaneously. Alexander says that where polypi are found in the vicinity of the infundibulum, we will usually find the antrum as well as the frontal inflamed, while, on the other hand, Lichtwitz only finds one-seventh of his cases of frontal sinusitis associated with diseases of the antrum.

ANATOMY OF FRONTAL SINUSES.

These are two pneumatic cavities situated in the frontal bone between the external and internal table thereof, at the angle of junction of the squamous and orbital portion, just back of the nasal eminence and supra-ciliary ridge, one on either side of the median line. In infancy and childhood they do not exist. It is not till about the seventh year of age, when the brain has finished its natural very rapid growth and attained almost its full size, that they commence to develop by the separation of the two tables of the frontal bone; they gradually increase in size until twenty-one years of age.

Their size, shape, and position are very inconstant; it is on account of this variability that it is not only difficult, but also dangerous to operate either by the internal method, through the nose, or the external one, over the eyebrow.

Each sinus is an irregular triangular cavity, with its base formed by the inferior orbital lamina, which at the same time forms the most anterior portion of the roof of the orbit immediately back of the supra-orbital ridge, and medianly by thin layers of bone forming the roof of some of the anterior ethmoidal cells,—for distinction this is called the nasal portion of floor. These last-named cells fill in the ethmoidal notch of the frontal bone and are called the fronto-ethmoidal cells. The nasal portion is 1 to 1.8 centimeter in width. This measurement is important to bear in mind, because it denotes the available space in which to make the opening for drainage from the frontal sinus into the nasal cavity.

The inferior orbital lamina is of practical interest because where it articulates with the lachrymal bone and the os planum of the ethmoid, it is on a plane with those bones which form the boundary between the ethmoidal cell and the orbit. It has been found that the general curvature of the inferior orbital lamina so nearly corresponds with that of the lachrymal bone and os planum, that it may be taken

as a landmark up to which the ethmoidal cells may be curetted out without breaking into the orbit. This base extends from about the median line of the skull to usually the supra-orbital notch or canal, occasionally the whole width of the frontal, or in some exceptional cases, into the frontal process of the malar bone. Also very infrequently it does not extend to the supra-orbital notch. It measures from 2 to 2.5 centimeters in width.

The anterior wall is formed by the outer plate of the squamous portion of the frontal bone, while the posterior wall is the thin rounded internal plate of the same bone, which forms part of the boundary of the anterior cerebral fossa. The inner or median wall is the interfrontal septum, a thin plate of bone situated in a comparatively vertical position in the median line of the skull just under the nasal eminence. (It is always tilted toward one side or the other, and never exactly in the middle.) The highest portion of the sinus is the height of this septum, therefore it is at the median extremity of the sinus, and measures 1.8 to 2.5 centimeters.

This sinus is larger in relation to the size of the skull in the male than in the female. Also in the male the walls are usually thicker; while in the aged the bones become thinner.

It has been ascertained by anatomists that the vertical portion of the sinus is absent in about 3 per cent. of skulls examined. This is a very important fact to bear in mind when contemplating making some of the external operations. As it bears just upon this point, we will insert here an observation regarding the texture or composition of the bone, which was made by Dr. Lothrop when examining some hundred and twenty specimens in the Harvard University dissecting rooms.

He writes: "Sections of the vertical portion of the frontal bone show that the diploe cease rather abruptly at the junction of the posterior and anterior surface (*i. e.*, the superior border of the sinus), although as just mentioned, the anterior surface is somewhat cancelated. If the verti-

cal portion of the frontal sinus is wanting the two laminæ of bone are nearly approximated, and the intervening space filled with cancelated bone." Hence, when chiseling through the bone, we should observe the structure of the bone we are cutting, and if diploe are found, desist, because in such case there is no sinus cavity beneath the opening being made,—the vertical portion of the sinus is probably wanting, and if we should proceed, an opening would be made into the anterior cerebral fossa.

The nasal portion of the floor is usually encroached upon by one or more small protuberances of bone called frontal bullæ. They are anterior ethmoidal cells, the roof of which is formed by the frontal, and the floor by the ethmoidal bone. One of these is quite constant, is of fairly good size, and opens into the upper extremity of the infundibulum. It is the catheterization of this cell that is frequently mistaken for the sinus.

Not infrequently the sinus is divided by one or two bony septa, the ostium in which is at the lower and posterior portion. These must be borne in mind when operating, and broken down, or else we may leave full one-half the sinus untreated and thereby make a partial failure.

The description of the outlet of the sinus will be deferred till after the anatomy of the ethmoidal cells is given, because, from my later study, I believe it slightly different from what was formerly considered, and can then be better understood.

ANTERIOR ETHMOIDAL CELLS

Are those small pneumatic cavities lying wholly within the body of the ethmoid, or formed by the articulation of the ethmoid with either the frontal, lachrymal, or nasal process of the superior maxillary, all of which open by ostia into either the infundibulum or middle meatus. As the ethmoid as well as the sphenoid was such a bugbear to the majority of us in our course in osteology, it may not be amiss to describe it in some detail. It consists of the lamina cribrosa, *i. e.*, the upper surface or roof of the bone, from the

center of the anterior portion of which projects the crista galli. Extending back along the median line from the crista galli is a ridge, on either side of which are three rows of foramina for transmission of the branches of the olfactory nerve. Dropping immediately from beneath the above ridge is the lamina perpendicularis, which forms the upper portion of the septum narium. From the outer two-thirds of the cribriform plate, on either side, hangs the body of the ethmoidal bone in which the majority of the ethmoidal cells are situated—otherwise called the lateral masses or ethmoidal labyrinth. An exceedingly appropriate name is the latter, because the ostia in the living subject are impossible to find, so varying are they.

The outer wall of the lateral mass is the os planum or lamina papyraca; it is a very thin bony layer, forming, as mentioned above, the division between the orbital cavity and the ethmoidal cells.

The inner wall is a rough lamina of bone, running parallel to the os planum, the whole length of the lamina cribrosa, about on a line with the outer row of foramina in the cribriform plate.

The lower and anterior part of this surface extends into a curved thin paper-like process of bone, known as the middle turbinated.

The posterior border articulates with the body of the sphenoid. The anterior flaplike extremity of the middle turbinated has been given the name of operculum.

It is this portion which is frequently removed to obtain better access to the naso-frontal canal and infundibulum. It may be well to mention that what we call the middle turbinated bone is by some denominated the inferior ethmoidal turbinated.

Along the inner surface, running from the upper part downward and backward, are one or more deep grooves called fissura ethmoidalis inferior, superior, etc. These grooves divide the surface into several projections or processes, called superior turbinated and supernumerary turbinateds.

The middle meatus is that portion of the nasal fossa between the inferior and middle turbinateds. The most anterior extremity of the middle meatus, away under the anterior end of the middle turbinated, is what has been denominated the turbinate fossa.

On the anterior part of the outer wall of the middle meatus is a curved slit called the hiatus similunaris, by which the ostium maxillare, and infundibulum communicate with the meatus. Anatomical research has established that in 53 per cent. of the specimens examined the ostium frontale or, as it is also called, the naso-frontal canal or canalis naso-frontalis, opens into the turbinate fossa and not into the infundibulum. This fossa is separated from the infundibulum by a thin plate of bone, which plate does not extend to the lower end of the hiatus semilunaris. It should be noted here that the outlet of the Antrum of Highmore, the ostium maxillare, opens into the most dependent portion of the hiatus semilunaris.

The rationale of this arrangement I cannot understand, because in any case, whether the frontal sinus opens into the turbinate fossa, or into the infundibulum directly or indirectly through some ethmoidal cells—the discharge has a very strong tendency to gravitate rather into the antrum than into the nasal cavity.

A circumstance to be borne in mind when catheterizing the sinuses, is that in half the cases the opening of the frontal sinus is anterior and internal to the hiatus.

All those cells wholly in the fore and lower part of the ethmoid, or those formed by the articulation of the ethmoid with the frontal, etc., and which open into the turbinate fossa, infundibulum, or middle meatus, are called anterior ethmoid cells.

The other cells which lie above and posterior to the middle turbinated and which open into the upper meatus, or spheno-ethmoidal recess, are called the posterior ethmoidal cells, and do not concern us in this paper.

Now, if the middle turbinated be removed, we will find one or two prominent cells, called the bulla-ethmoidales.

The mucous membrane lining these cavities is similar to that of the nasal chambers, except that the mucous and lymphoid glands are much less numerous, especially the latter. It is more sensitive or susceptible to external influence, and the connective tissue is more loosely adherent.

For the last two reasons, œdema or inflammatory swelling is more easily produced.

DISEASES.

The diseases which affect these sinuses are identical with those affecting the other nasal mucosa, although they are usually denominated empyemas of the sundry cavities. This is because any diseased condition taking place in such a nearly closed cavity frequently proceeds to the purulent stage before being discovered—for two reasons: 1st, the difficulty in examining these cavities, or comprehending the early symptoms of the diseases therein; and 2d, on account of the small outlets of such cavities. And furthermore, as such outlets open from the upper portion of the cavities—frontal sinus only excepted—the early more non-irritating discharge is pent up in the cavity until it virtually putrefies or becomes purulent.

An enumeration of the diseases is:

1st, Catarrh { acute, simple, chronic—which may be followed by a general hypertrophy of the mucosa.

2d, Empyema or true suppurative inflammation.

3d, Necrosis.

4th, Diphtheria.

5th, Tuberculosis.

6th, Syphilis.

7th, Foreign Bodies.

8th, Tumors, Benign { Mucocele, Polypi, Exostoses, Fibromata, Cholesteatomata

Malignant { Epithelioma, Sarcoma, Carcinoma

At this point I think it advantageous to insert a portion of a table of symptoms of Dr. Dundas Grant, which should direct our attention to the sinuses. (The signs of antral

suppuration are given for the sake of diagnosis by contrasting the two side by side.)

ANTERIOR GROUP.

SIGNS OF SUPPURATION OF ANTRUM.

Presumptive:
(a) Unilateral pus.
(b) Intermittence.
(c) Infra-orbital pain.
(d) Subjective fetor.
(e) Upper molar caries.
(f) Pus in middle meatus.
(g) Mucous polypi.
(h) Lateral swelling.

Probable:
(a) Return on bending forwards.
(b) Opacity on transillumination.

Certain:
(a) Puncture and transsufflation.
(b) Puncture and irrigation.
(c) Puncture and aspiration:
(1) Inferior meatus.
(2) Alveolus.
(3) Canine fossa.
(4) Middle meatus.
(d) Catheterization, inflation, irrigation.

SIGNS OF SUPPURATION OF FRONTAL SINUSES.

Presumptive:
(a) Continuity of discharge.
(b) Seat of pain.
1. Spontaneous.
2. On pressure.

Probable:
(a) No return on bending forwards.
(b) Return after antral irrigation.
(c) Pus on tampon in hiatus.
(d) Transillumination.
Antrum—negative.
Frontal—positive.

Certain:
(a) Catheterization.
Inflation.
Irrigation.
(b) Operation.

SIGNS OF SUPPURATION OF ANTERIOR ETHMOIDAL CELLS.

Presumptive:
Pus continuous.
Pain.
Spontaneous supra-orbital.
On pressing lachrymal bone.
Asthenopia.
Mental depression.

Probable:
Opacity on transillumination.
Lesions in middle meatus.
Anterior rhinoscopy—pus, granulations.
Probing—pus, blood, bare bone.

Certain:
Puncture of bulla.
Elimination of antrum.
(Exploratory irrigation).

Ætiology.—Upon this division little need be said, as most of the above enumerated diseases or abnormalities have the same causation as they have when attacking any of the other portions of the nasal lining.

Catarrh—acute and chronic—in its ætiology and symptomatology is almost identical with those conditions attacking the nares, except on account of the anatomical conformity of the outlet of these cavities, slight swelling of the mucosa around them obstructs the egress of the mucous discharge, then the cavity becomes filled, causing pressure, which in turn causes considerable pain in some cases. This pain may be referred to the supra-orbital region, vertex or occiput; little dependence can be placed upon its location for diagnostic purposes.

The microbes or bacilli of the different infectious diseases frequently gain access to these cavities and cause an inflammation of the lining. For example, influenza, measles, scarlet fever, diphtheria, typhoid fever, pneumonia, erysipelas, cerebro-spinal meningitis, peritonitis, variola, and glanders.

A condition diagnosed as exhaustion frontal sinusitis has been mentioned frequently of late by English writers. It is a chronic catarrhal condition of this cavity in which the discharge continues of a thin watery, colorless character, does not seem to cause much immediate swelling of the mucosa, nor is it followed by a chronic hypertrophic condition of the same, nor polypi. It is more of a hydrorrhea, although the discharge is not sufficiently copious to be called such. It is found only in anæmic or nervously exhausted individuals. And it cannot be considered merely a simple catarrh, because it is not amenable to the treatment that the latter is. A general tonic treatment for the system is the only cure. Catarrhal inflammation frequently proceeds to empyema. I might say all neglected cases do.

Treatment.—Acute conditions are amenable to local treatment with some symptomatically indicated internal remedy. Reduce the swelling of the nasal mucosa in the vicinity of the ostia by application of solutions as menthol, cocaine, etc. We should advise, as well as several allopathic authorities, among them Zuckerkandl, against the frequent use of cocaine in these cases. Wash out the accessible

cavities with a normal salt solution, weak solution of eucolyptol, hydrastis, Dobell's, etc.,—of the former two, not stronger than 10 or 15 drops to ½ pint of water, and add a pinch of salt.

These last precautions are mentioned because from personal experience I have found the cleansing or medicinal solutions in the usual strengths cause pain when injected into the accessory cavities; furthermore, all washes should be quite warm. Another point, that it may be well to speak of here, is that such solutions should be introduced into the cavities very slowly, because pain may be produced from internal pressure, as the fluid can only flow out slowly.

Internal Medication.—Nux. vom.—at the very beginning I have found this remedy, as also ars., very satisfactory. Kali bi. 6x—after the condition has existed some little time, and the discharge has taken on the characteristic qualities of this drug. I have seen the stronger preparations aggravate the pain. Sang. nit.—a general œdematous condition of the nasal mucosa with the discharge still colorless and thin. Kali phos.—from the description of exhaustion sinusitis, I should judge that this remedy would be beneficial.

In conclusion may say that operative treatment is seldom needed. Occasionally the ostium of the frontal sinus may require enlargement.

All operative measures will be reserved until the end of the article.

EMPYEMA.

A very general, or nearly universal, use of this term to express all diseases of the nasal accessory cavities, I think has caused a great deal of confusion. Still it can scarcely be wondered at, because till very recently our exact knowledge of these cavities has been very meager, and especially when we note two facts, 1st, that all the diseases, in the latter stages at least, are accompanied by a purulent, or rather a muco-purulent discharge—and 2d, the patient seldom consults the physician in the early stages before suppuration has commenced.

Within the last two years so much study has been given to these cavities, and their conclusions so widely published, that I think it will relegate the term empyema to its proper place. And it will simply mean suppurative inflammation of these cavities.

The following causes may produce it: (1) Neglected chronic catarrh; (2) A foreign body causing traumatic ulcer; (3) Trauma to the frontal bone will cause the same; (4) Occlusion of the ostia—(*a*) either by general hyperplasia of the mucous membrane, or polypi in their vicinity causing retention and degeneration of the simple mucus, the retention of which decaying substance sets up suppuration; or (*b*) by plugging in cases of epistaxis, or by nasal splints.

We have, with this condition, occasionally the usual systemic symptoms of absorption of pus; and the diagnostic sign is the finding of pus exuding from the mouth of the cavity. Treatment is principally operative, and will be described below.

NECROSIS.

First, is frequently caused by the extension of the foregoing process to the bony walls of the cavities; 2d, it may be of syphilitic origin; 3d, by pressure of a tumor in the cavity or its immediate vicinity; 4th, of tubercular origin.

It is most frequently found in the ethmoidal cells. The term necrosing ethmoiditis of Woakes is probably familiar to all. This author believes, on account of the mucous lining of these cells being so delicate and thin, and the bony walls also thin, that any inflammation can exist only a short time before it will attack the osseous tissue.

Diagnosis is made by feeling the denuded roughened bone with the probe. We should suspect this condition when there is the characteristic fetid odor to the pus.

Treatment is ablation of these cells.

DIPHTHERIA.

The bacillus and exudate of this disease have been found post-mortem in the frontal sinuses. As this is merely an

insignificant portion of the systematic invasion and we can direct no particular treatment thereto, it is merely worth mentioning that such may exist. Of course it should be borne in mind that an attack of this kind may be the origin of a chronic catarrhal or suppurative process.

TUBERCULOSIS.

Ulcers of this character have been found in these cavities, sometimes accompanied by necrosis. Always in conjunction with constitutional affections elsewhere. Therefore mere mention here is sufficient.

SYPHILIS.

In these cavities have been found gummata, syphilitic osteoperiostitis, and ulcerations of both the mucosa and bone. As this also is merely a local manifestation of a constitutional poison, constitutional treatment being necessary, we need only to advise that the parts be cleansed and treated as thoroughly as possible.

CORPORA ADVENTITIA.

There are reports of a few cases in which snuff, larvæ, and insects have been found in the frontal sinus. The irritation of their presence of course sets up inflammation with accompanying pain and muco-purulent discharge.

TUMORS.

The list of tumors enumerated above are given as being found in these cavities; but the only ones which have originated within the sinus or cells are mucoceles, polypi, exostoses, sarcomata, and fibromata.

The other named new growths have originated from outside of these cavities, and only encroached upon their lumen secondarily.

They all cause a purulent discharge, and are supposed to be a simple empyema—unless, as in some cases, they grow very large, force the walls of the sinus outward, and make quite a noticeable tumor in this neighborhood.

When there is a purulent discharge from the different ostea and co-existent general polypoid degeneration of the nasal mucosa, or a history of the latter,—polypoid growth should be strongly suspected within these cavities.

But these are not always associated, as I had demonstrated to me in a case under my care this last year,—in which there were no polypi narium on examination, nor could I elicit any history thereof, although I obtained a very intelligent and interesting history of the case for about fifteen years previous to my treatment. Upon opening the frontal sinuses and antra by radical external methods, the polypi were small, but so numerous that, when the pressure of the bony walls was removed, the polypoid tissue bulged out like a hemisphere.

Diagnosis and Symptoms.—In order to avoid tautology I will combine these two divisions. Those common to almost all the diseases of these cavities are: (1) Discharge. (2) Translucency. (3) Pain. (4) Swelling. (5) Congestion.

First notice where the principal amount of discharge is situated, then cleanse the nasal cavity by anterior or posterior nasal douche. Next catheterize the antrum to ascertain if there be mucous or purulent matter in it. If so, there is possibility, not probability, of antral sinusitis. If no discharge, there is no disease in this quarter. We should then endeavor to catheterize the frontal sinus. If the wash returns clear, the frontal is normal, while, if not clear, sinusitis of that cavity must exist.

Now if purulent discharge was noticed under the operculum on first examination, but on catheterization it was not found in the antrum or frontal, by exclusion we may diagnose an anterior ethmoiditis. But, as mentioned at the beginning of this article, they seldom occur alone.

For catheterization we may use a normal salt solution or a five-volume solution of hydrogen dioxide. The presence of pus in the antrum does not indicate primary disease of this cavity, because the exudation from the frontal so frequently gravitates into the antrum.

Where there is disease of not long standing of both

frontal and antrum, I think it advisable to treat the frontal first, and then, if we find very little discharge from the antrum, we may suppose that the prime difficulty is in the frontal, and the antra are merely acting as receptacles.

Of course, if the sinusitis is of long duration, the antra are probably also diseased from the infection. Some, among them F. Fehleisen and Kuhnt, lay considerable stress on the presence of pain in the vicinity of the supra-orbital ridge on pressure as indicative of frontal sinusitis.

Transillumination is a method regarding which there are very diverse opinions.

In frontal disease it is even more difficult than in antral, on account of the comparative thickness of bone over the sinus. The rhinologist needs to have considerable experience and that experience with the same power lamp, for a slight variation in the illuminating power will apparently give different results on the same sinus.

It often very closely simulates supra-orbital neuralgia, but frequently we are able to localize the maximum amount of pain in neuralgia over the supra-orbital notch, while in sinusitis it is over or in the nasal eminence of the frontal bone. Also in neuralgia there will be no discharge under the turbinated body.

The pain in migraine or hemicrania is spread more generally over the head, and there is absence of discharge, as in neuralgia.

When the inflammation is very high and acute, there may be considerable swelling and inflammation of the overlying soft tissue; it may resemble either orbital abscess, ptosis, or suppuration in the lachrymal apparatus. This will be diagnosed by the history, and again the presence of the characteristic discharge of sinusitis.

It may be confounded with tumors of the orbit. In such cases there is less inflammation of the soft parts and no nasal symptoms.

Lastly, sinusitis opening through the orbit may resemble an orbital fistula. This can be diagnosed by not only finding the necrosed bone, but the opening from the orbit into

either the frontal sinus or the ethmoid cells by the aid of the probe.

An old case of sinusitis of any of the accessory cavities very closely resembles ozæna. (Use this term in its usual acceptation, as indicating a fetid atrophic rhinitis *per se.*) Atrophic rhinitis with the usual scabby formations is a not frequent result of the continuous draining of purulent matter over the nasal mucosa.

A peculiar condition which materially aids in diagnosis is this—when the rhinitis is due to sinusitis, the patient, possessing better olfactory sense than in ozæna, appreciates the disagreeable odor in the nares more himself than those surrounding him, while in true ozæna the fetid odor is more noticeable to others than to the patient himself.

And this is not so very strange, when we think of the conditions in the upper portion of the nares in the two diseases. In true ozæna all the mucosa of the nares is atrophied, therefore all the terminals of the olfactory nerve atrophied, and almost complete anosmia obtains, while in the atrophic conditions dependent upon sinusitis, the atrophy exists below the outlets of the sundry cells; therefore the olfactory terminals in the olfactory slit above the ostia are still unimpaired, and they being in such close proximity to the decaying mucous or purulent discharge, take cognizance of it more than the olfactories of persons around the patient.

Sequelæ.—The diseases of these cavities are not only important on account of the continuous purulent nasal discharge, which is botli disgusting to the patient himself and disagreeable to those around him, but even more so because of the general toxæmia in consequence of so much purulent matter being exposed to the absorbent glands, and furthermore, the inflammation being in such close proximity to such important organs as the brain and eye, it may, and not infrequently does, attack them.

Here I would recall your attention to the thinness of the lamina cribrosa, the wall between the ethmoidal cells and the cerebral cavity; the os planum, between the same cells

and the orbital cavity;—also the floor and posterior wall of the frontal sinus.

But on account of absorption of the purulent discharge, almost every organ in the body may be affected.

Besides ozæna, polypi, and sundry nasal catarrhs, we may have in the upper respiratory tract, suppurative tonsilitis.

Eye complications are dacryo-cystitis, ptosis, exophthalmos, and diplopia. Upon this may be dependent different forms of otitis suppurativa. Very frequently we find stomach and bowel abnormalities as sequelæ. A condition resembling phthisis (pseudo-phthisis) does not infrequently accompany sinusitis. Cases of thrombo-phlebitis of the cerebral sinuses, and phlebitis in the lower extremities, have been reported as due to these inflammations. Meningitis or cerebral abscess may also complicate it. Lichtwitz even thinks that he has seen albuminuria and articular and rheumatic affections dependent upon the absorption of pus into the system.

Treatment.—This may be divided into 1st, internal or medical; 2d, local; 3d, surgical or operative.

As but few homeopathic rhinologists have studied the diseases in this locality, nothing definite can be given upon the first heading.

(2) *Local Treatment* consists first in directing such local measures to the mucous membrane of the nares as will reduce its thickness, especially around the ostia of these cavities. And then, as far as possible, to cleanse the cavities themselves.

The best solutions for reducing swelling around the cell outlets I think are menthol 10 grs. to ounce of oil, alum 20 grs. to half pint of water, alumnol five or ten per cent. solution in water, and cocaine four per cent. solution. Immediately before using these, it is advisable to clear away all mucous discharge from the nares by some quite warm alkaline douche.

The frontal is the only cavity under consideration which has an opening large enough to introduce an instrument for cleansing, except it be the one or two large cells at the

upper extremity of the infundibulum, which form the frontal bulla. The catheter frequently enters these bullæ when we think it is in the frontal sinus.

The solutions usually employed for catarrhal or suppurative conditions may be used with benefit here. But bear in mind to make them one-half or two-thirds the strength they are used elsewhere.

(3) *Surgical.*—This is by far the most important, and I might say almost the only treatment, because nothing but acute catarrh and acute suppuration is amenable to anything else.

This consists in (*a*) ablation of the anterior ethmoidal cells for disease within themselves, and to make drainage for the frontal sinus, and (*b*) the external operation upon the frontal.

(1) The internal mode of operation is as follows: The operculum or about ¼ inch of the anterior extremity of the middle turbinate is removed. This may frequently be done with one application of Gleitzmann's conchatome, or sometimes it is advantageous first to weaken the turbinate by an incision either at the extreme anterior end just over the turbinate fossa, or a similar incision at about the juncture of the anterior and middle third of the turbinate body. The first incision is the front and upper boundary of the piece of bone that is to be removed: while the latter one forms the posterior boundary of such piece.

If there seems to be considerable disease, it is frequently necessary to remove the whole turbinate. This is easily accomplished by one or two more cuts with the conchatome.

Now all the anterior ethmoidal cells are comparatively accessible. These are usually removed by a ring curette, which, if they are necrosed, is very easy; but if not, it is sometimes necessary to use a drill and motor. If all the cells above the turbinate fossa and at upper end of infundibulum are excavated, we make an opening into the frontal sinus.

In operating in this manner, exceeding great care needs to be taken that an opening be neither made through the

os planum nor the cribiform plate. An approximate measurement of the height to which the lateral mass may be curetted, without entering the cerebral fossa, can be obtained by measuring with a ring probe the distance alongside the septum in the olfactory slit to the inner third of the lamina cribrosa. Noting the distance the probe entered, we know about how far the curette or drill can enter without danger to the brain. And the outer extent of curettement may be ascertained by estimating the position of the os planum and lachrymal bone by feeling the curve of the inferior orbital lamina of the frontal bone.

While experimenting upon the cadaver several years ago, I noticed how easy it was to make these errors; and I determined to make an instrument to lessen such accidents. The outcome of experiments was this instrument, a frontal sinus drill, made by Tiemann & Co., of New York, which bears my name. The salient features of the instrument are these: (1) a blunt probe is placed at the end, which will enter any obstructed nasal frontal canal, and by pressure it will follow up the natural canal. (2) The burr being seven millimeters in diameter, only one-half to two-thirds the lateral or antero-posterior measurements of the nasal portion of floor of frontal sinus, cannot do damage. (3) From measurements upon the cadaver, the curve of the drill is such that, when the probe is engaged in the canal and the cannula rests upon the lower boundary of the anterior nares, the direction of the probe and burr is identical with that of the average nasal frontal canal. The drill may be worked by the hand or electric motor.

It may be used either to make exploratory openings into the frontal sinus, or when operating, to make the primary opening through the ethmoid cells, which may be enlarged by curette or burr. When giving the anatomy in this article it will be remembered that there are some cells in front of the infundibulum or turbinate fossa, and that the ostium frontale is usually in the posterior part of the nasal portion of the floor of the sinus. This frontal drill has followed up the normal opening, and therefore with the

curette we may remove the cells in front of, and toward the median line from, the track made by the probe, without fear of wounding important tissues.

Furthermore, with this opening and the measurement with probe in the olfactory slit, mentioned above, we can obtain a very good approximate idea of how much of the ethmoidal labyrinth should be removed.

External Operation.—Of the external operations there are many. Almost every operator has one which has received his name. They are all very similar; each succeeding one seems to have some advantage over the others. But each operator considers his own the best.

This variety of method only goes to show the difficulty to attain the object striven for.

The following are the names of noted rhinologists after whom operations have been named: Jansen, Kuhnt, Killian, Roser, Ollier, Gussenbauer, Kuster and Czerny, and Ogston-Luc.

The object in all the operations is to open the frontal sinus as thoroughly as possible, and in most of them to establish a large outlet from this cavity into the nares.

It would occupy too much time to give even a mere outline of these several methods. If any are interested in such, I would refer them to an article by R. Winckler, in the *Archiv. fur Laryngol. und Rhinol.*, Bd. VII., Heft I., for a description of them.

The last method, called the Ogston-Luc operation, is the one usually employed in England and France. It has received this name because these gentlemen brought it more widely before the profession, although I believe an Englishman, Mr. Spicer, was really the originator and first to perform it.

The operation that I have performed, and the one that seems to be preferred by operators in New York, is what has been denominated Bryan's modification of Ogston-Luc's; but I have seen this modification performed by Dr. Myles some time before Dr. Bryan published his description thereof.

I will first give the Ogston-Luc operation, and then mention the subsequent modifications thereof.

After shaving the eyebrows and making the seat of operation aseptic, make an incision through the skin, muscle, and periostium from the root of the nose along the median line upward on the forehead, 1½ or 2 inches in length.

With a periosteatome the periosteum is loosened from the bone. This, with the overlying muscles and integument, is drawn aside with retractors. Cut through the nasal eminence with a trephine two centimeters in diameter, exactly in the median line, on a level with the superciliary ridge. On removal of the bony button, the median extremities of both sinuses are exposed.

Curette away all carious bone, polypi, etc. Then open up the fronto-nasal canal by a probe or trochar, having first placed the little finger in the nares for a guide.

After having removed all diseased tissue from the cavities, wash it out with an antiseptic solution, and make application of a twenty per cent. solution of zinc chloride. Introduce a self-retaining drainage tube in the passage from the frontal sinus to nares. And finally close the cutaneous incision with interrupted or subcutaneous sutures.

From reported cases, latterly the surgeons usually clean away the anterior ethmoidal cells more thoroughly than described above.

Dr. Bryan's modification is to make the opening in the anterior bony wall entirely to one side of the median line, through the superciliary ridge, with the trephine.

Dr. Myles makes his osseous aperture with a mastoid chisel in the same spot, and then thoroughly clears away the cells from the nasal portion of the floor with straight chisels and curette. In order to remove all the cells between the frontal and the nares with a straight chisel, it is necessary to make the external opening through the superciliary ridge.

Lastly will describe what the speaker believes still a little improvement upon the foregoing.

I follow Dr. Myles' custom of making the external open-

ing with the chisel rather than with trephine; because in this manner the diploe in the bone above the sinus may be discovered, if the sinus is abnormally low, as mentioned before while considering the anatomy of this region.

As in all these operations there is more or less scarring and falling in or retraction of the soft parts, and as in the above operations, the most prominent portion of the forehead—the nasal eminence in the one, and the superciliary ridge in the other—is cut through, therefore the support of the soft tissues is removed; consequently there would be more depression than if by any means the osseous opening could be made below the superciliary ridge. Beside this, if we can make this incision below the superciliary ridge, there is less likelihood of accident if the sinus happen to be abnormally low.

In order to attain this object of having the osseous aperture below the superciliary ridge, and still be able to thoroughly chisel away the nasal floor, I had a set of angular chisels manufactured, as you see here. I have used similar ones on the cadaver several times, and these upon a case with satisfactory results.

There are made entirely for use, and not for looks, as you may see. I think I can obtain sufficient strength if the angular portion of shaft be made a little smaller in circumference. This would give a little more room in operating, and at the same time it will give the instrument more graceful lines.

It should be mentioned that the cutaneous incision for Dr. Myles' operation is just above the eyebrow; while that for my modification may be made just below it; therefore this is little less sightly.

I will now finish with giving a concise history of the severest case of accessory disease I have ever witnessed.

A lady, aet. fifty-three years, very good family history, except that a grandmother died of phthisis.

Nineteen years ago Dr. Salisbury diagnosed "consumption of the stomach." Was on Salisbury's diet for six years, which,

with constant flushing of stomach, has kept the stomach symptoms in abeyance.

Seventeen years ago injured knee, which confined patient to bed for one year. About the same time suffered with sore eyes and occipital headache, both of which were relieved by extraction of all (13) upper teeth,—all of which were ulcerated ; very likely antral empyema, caused by the ulcerated teeth roots, produced the ocular and cephalic symptoms. Patient has had profuse nasal discharge as long as she can remember ; very much worse the last ten years.

In 1897, she relates that her physician removed two pieces of bone from the nose, upon which "the pus spurted into the surgeon's lap." This operation relieved a frontal headache and deafness of two years' duration.

Hearing diminishing for last six months.

Losing gustatory sense and total anosmia for four months. She appears cachectic, is very weak and exceedingly nervous.

A very profuse acrid purulent nasal discharge is constant. Uses on an average two handkerchiefs per hour. Pus rots the linen.

Rhinological examination.—Discloses all mucosa reddened and thickened ; anterior portions of middle turbinate have been removed ; pus covered whole upper surface of inferior turbinated coming from turbinate fossa.

Catheterization of antra and frontal sinuses brought away considerable pus.

Posterior rhinoscopy showed pus on posterior extremities of both turbinates.

Transillumination revealed cloudiness over both antra.

Further details of case I deem unnecessary.

Radical operations on all sinuses were advised.

February 4. A Desault's operation was performed on both antra ; aperture in both canine fossa large enough to introduce the little finger was made ; on removal of the bone the polypoid contents of cavity bulged out like half a sphere ; this was thoroughly curetted, and was accompanied by very profuse hemorrhage; the floors of both antra were denuded of mucous membrane, and the bone carious, this also was curetted. After which I made an application of chromic acid, 50 grs. to the ounce, to the entire walls of the antra.

On account of the previous debilitated condition of the patient I determined to operate no further that day.

There was great swelling and redness of cheeks almost closing the eyes, for three days after the operation, probably due to the inflammation caused by the cauterization of the entire walls of the antra. The patient was very weak after the operation, and the nausea, etc., following administration of an anæsthetic, were very severe, as also after the subsequent operations.

The temperature varied between normal and 99⅖ with two exceptions.

The antra were cleansed daily with a five-volume solution of hydrogen dioxide, followed by electrozone, 1 part to 4 parts of water, and packed with iodoform gauze.

February 21. The patient having recovered sufficient strength, the left frontal sinus was opened, as I have described as my modification. A polypoid condition similar to that of the antra was found. It was curetted, and all the anterior ethmoidal cells were destroyed with chisels and curette, leaving a large opening into nares. The cavity was then packed with iodoform gauze, and external wound left open and also dressed with same gauze.

The second, fourth, and sixth days after operation I cauterized about one-third of the lining of the sinus at a time, with acid. chromicum, 10 grs. to the ounce.

March 7. The right frontal sinus was operated upon in a similar manner, and as a few granulations were found in the left sinus, these were curetted.

March 11. The patient having recovered somewhat from the shock of operation, I determined to use the stronger solution of chromic acid,—50 grs. to ounce,—and applied it to one-third of each frontal sinus. Every second day commencing at the median extremity a successive third of both of the sinuses were cauterized after being cleansed, and were then packed.

I noticed the day following each application of the stronger solution, the temperature arose to 100⅖. These were the only dates it went above 99⅖—with the exception of the evening's temperature immediately after each operation.

March 21. The sinuses showing no tendency to recurrence of granulations, the patient was again anæsthetized, and a self-retaining rubber drainage tubes, 1 centimeter in diameter, were introduced into the passages between the sinuses and nares,—the

edges of external wounds on both sides were freshened and sutured.

Until closure of wound the sinuses were packed with iodoform gauze after being cleansed. Subsequently they were washed through the drainage tube.

The antra were packed with the same gauze daily for two weeks following operation, and subsequently washed.

April 16. Up to this date have seen patient every few days; all sinuses are cleaned with peroxide, and then with Lloyd's Hydrastis,—the patient herself has learned to cleanse the cavities,—the openings into the frontals being so large she cannot help finding them. Upon washing, there is no discharge at all from the right side, and not more than about 15 drops from the left nares. And the patient informs me that she only uses one handkerchief a day, while before operation she used about two every hour.

I should mention that the present discharge probably comes from the left posterior ethmoidal cells, or possibly the sphenoid.

On account of the patient being influenced so badly by cocaine and bleeding so profusely on slightest abrasion, I have decided to allow her to recuperate her strength, the while keeping watch that the discharge does not increase, thereby indicating any extension of the disease. Therefore have allowed her to return to her home, which is in a Southern State; but I expect to see her again before the date of meeting, and will probably have an opportunity to make a later report.

I have much hopes of benefiting her greatly by internal medication, as she is very susceptible to the antipsoric remedies. I have seen undoubted aggravation from kreos. 6x, and sulph. 3 and 30, upon four or five different occasions. These were so marked that at one time the patient refused to take any internal medication.

ABSTRACTS FROM CURRENT LITERATURE.

Freudenthal, W.—Chronic Urticaria of the Larynx.—*N. Y. Med. Jour.*, December 31, 1898.

A collection of all the cases of urticaria of the upper air passages has been published by Delbul (*Contribution a l'étude de l'urticaire*, etc. Thèse Bordeaux, 1896. This is the first chronic case on record.

The patient, man of fifty-nine years of age, had an attack of cutaneous urticaria alone in '66, '89, and '90.

"In '90 he consulted me, complaining of vague symptoms in his throat, which at times became more marked, so that he felt pain, which ceased during eating and at night. At that time I found in addition to a somewhat enlarged lingual tonsil, a diffuse redness of the laryngeal surface of the epiglottis with a slightly œdematous elevation on its right side.

"The patient never had a specific infection and had no other complaints, nose, throat, and lung being free, so that then (1891) his condition was not at all clear to me. Treatment for eight months at longer or shorter intervals with various local and general medicines had no visible effect on his larynx, and cure resulted only after two months' sojourn in the country." In '96 another attack. "Now he mentioned the fact that he suffered from general urticaria, and now everything was clear to me. Three weeks later, with the disappearance of the urticaria of the skin, the laryngeal condition improved, and I did not see him again till March, '98, when he had a third attack. This time he described a constant sensation in the right side of the larynx, as if there were something there which he felt like pulling out. Of course he had his general urticaria, which annoyed him greatly, and for which he consulted several dermatologists. Again I treated him locally with different drugs, but without result. In fact, he never felt the applications. For example, when I applied

even a 50 per cent. solution of lactic acid, he felt it on his left side, but not on the right, and he generally said, 'Doctor, you did not get to the right side, where I have all the trouble.' It was insensitive to very strong solutions. He then went to the seashore, and with the disappearance of the general urticaria his throat 'improved.'"

Upon laryngological examination, "At one time we see one or more herpetiform prominences with œdematous surroundings, and others the epiglottis shows a deep red color, and again it is perfectly pale." PALMER.

Minor, Jas. L.—Inverted Retinal Images and Inversion of the Fields of Visions.—*New York Med. Journ.*, February 18, 1899.

The following observations on an actual case may afford some information on this doubtful point:

In the *New York Medical Journal* of November 5, 1898, I reported a case under the head of "Learning to See at Forty," first with one eye, and later with both. The man had been blind from birth, and at the age of forty acquired his sight through operations at my hands. I give in detail the tests to which he was subjected from the time he was allowed to use his eyes until the sense of sight was fairly well established.

Since the case was published I have received a few letters from physicians, in which not only an interest in the article was expressed, but a desire to know whether objects looked at and visual fields were inverted; for there are some physiologists who teach that we see things upside down, because inverted images of objects looked at are formed on the retina, and because the lower half of the retina is concerned in seeing things above the horizontal—the left half of the retina objects on the right side of the median line, etc.

They say objects are seen, and appear to be, upside down, to infants and to others, when the function of vision is first exercised, and that only after the sense of touch has been so cultivated as to demonstrate that it gives the real and correct relation of objects do we have things seen appear to us in their natural position and relations—by a process called *reinversion.* They say that without the sense of touch things would always appear upside down through the sense of sight, and that if a person possessed of the

sense of touch, but not with nor ever having had that of sight, be made to see, objects seen would appear upside down, until by cultivation this process of reinversion established the proper relation between the senses of touch and vision. My patient was in this latter condition, and it was supposed that his experiences would throw some light upon this subject—one alike perplexing to the teacher and a stumbling-block to the student. There was neither inversion of object nor of field of vision with him.

The first object he saw with distinctive shape was correctly appreciated (a glass goblet, the outlines of which he mapped out by movements of the hand before touching). And the first object he saw—a round ball—he reached out and touched with little hesitation, though it was two feet off and about 45° below the level of his eyes, and the upper half of the retina was concerned in getting his first glance of it.

It seems to me that this is as it should have been, for the sense of direction of an irritant is the same for the retina that it is for any other nerve of the body ; it is referred back to the same direction whence it came, opposite the point of impact. For instance, if the fingers be extended and the hand held palm upward, and any part of the palm or palmar surface of the fingers be irritated, the force producing it will be recognized as having come from above ; or, if the palm be down, the force will have come up, etc.

Now, if the fingers be curved up somewhat on the palm, so as to make a sort of cuplike cavity, the concavity of which will be the palmar surface of the hand and fingers, the forearm being vertical, the wrist bent back, so as to direct the concavity forward, we will have a palmar surface arranged on the plan of the retina.

The lower half of the cavity facing upward will be the palm of the hand, irritation of which must come from above ; the upper half of the cavity, the palmar surface of the fingers facing downward, irritation of which must come from below. The retina is just such a cup-shaped nervous expansion, with its perceptive elements facing the concave surface, and it is as natural that objects in the field of vision should excite correspondingly opposite portions of the retina as it is necessary for the inverted image of an object to be formed on that part of the concavity of the retina perceiving it.

An error has been fallen into in confounding the inverted image of the object formed on the retina—a simple phenomenon of refraction, which may be visible to the observer but not to the subject—with the recognition of the object by the brain, and its projection to its proper position in space. And the so-called re-inversion of the field of vision—as compared with the sense of touch—differs in no material way from nerve action elsewhere. The fact that my patient had perception of light before he was operated upon may be cited as a possible explanation of his correct interpretation of the field of vision, but the explanation which I have given of retinal perception and projection makes such inference unnecessary. DEADY.

White, M. S.—Mercurius Protoiodide in Cough.—*Am. Hom.*, March 1, 1899.

Cough occurring during secondary stage of syphilis ; no particular cause can be found for the cough. Removal of tonsils, if they are hypertrophied, and the usual cough remedies are of no avail. It quite quickly succumbs to merc. prot. in low potency.

PALMER.

Milligan, W. (Manchester).—**Sinusitis Suppurativa of Right Maxillary and Right Frontal Sinus.**—*Jour. Lar., Rhin., and Otol.*, January, 1899.

Male, æt. twenty-two years. Two years after acute attack of la grippe was attacked with pain over right maxillary antrum with discharge from right naris, at first clear and odorless, subsequently purulent and fetid. One year after this examination showed right middle turbinated hypertrophied, and polypoid degeneration of anterior extremity. Purulent discharge in middle meatus increased when inclining head forward ; right suborbital umbra ; second right molar tooth carious. "No other accessory sinus *appeared*, [and I use the term advisedly] to be affected." Second molar tooth was extracted, pus evacuated from the antrum, the mucosa of which was œdematous and granular which latter was therefore curetted. Recovery very favorable.

But two months later had severe intermittent neuralgic pains in supraorbital region, especially right-sided. Attempts to irrigate right frontal sinus with Lichtwitz canula were unsuccessful. Finally an external median incision was made ; pus found in

right frontal sinus ; a conical drainage tube was placed in right naso-frontal canal ; immediate suturing of wound performed.

For the following reasons the frontal sinusitis was probably developed after the antral disease, and very likely from forcing the discharge from the antrum, through the infundibulum and naso-frontal canal into the frontal : " 1. Careful examination of frontal sinus was made at first examination. 2. Sudden appearance of a fresh line of pus toward the anterior part of the middle meatus. 3. Sudden onset of so-called neuralgic pains around the sinus. 4. The rapidity with which the healing took place, (this to my mind being an indication that the disease was not of long standing)." This operation upon the frontal sinus was followed by an attack of erysipelas, although carried out in the strictest antiseptic manner ; the author had had same experience three times before, and he thought it due to inflammation of the skin consequent upon a local cellulitis caused by streptococcic poison, because : (1) streptococci are very frequently found in the pus from the frontal sinus ; and (2) there is great difficulty to prevent pus trickling into the lips of the incision, especially if the sinus be fairly well full. PALMER.

Marlow, F. W.—Spontaneous Absorption of Senile Cataract with Restoration of Vision—Dislocation of Nucleus and Capsule into the Anterior Chamber.—*New York Medical Journal*, January 14, 1899.

The author gives the following history of an interesting case :

Mrs. L., Irish, was operated upon by me ten years ago for cataract. She was at that time about seventy years old. Her left eye had been failing for twenty months and her right for ten. The cataract in the former was quite ripe, in the latter still immature. The former only was operated upon, the resulting V. being $\frac{5}{6}$ partly.

Getting on well with one eye, she has never consented to operation on the second.

On account of some diminution of vision in the left eye she consulted me on November 18, 1898. I then observed that the pupil of the right eye was black. Closer inspection showed the small, brownish-yellow cell-nucleus lying in the lower part of the anterior chamber, half concealed by the limbus and broad arcus senilis. Its edge was indented, and from each margin folds of

what appeared to be the capsule of the lens passed upward, converging to a point in the anterior chamber almost level with the upper margin of the pupil. This membrane was for the most part transparent, its limits being very sharply defined, and dotted with minute opaque white spots.

The fundus could be seen without much difficulty, the only deviation from the normal noted being an atrophy of the choroid immediately around the optic disc.

The pupil was five millimeters wide and showed no reaction whatever to light and convergence. The iris was tremulous. The pupil of the left eye responded moderately but promptly to these stimuli.

V. of R., with + 10 D. sph., is $\frac{}{36}$.

V. of L., with corrections, was still $\frac{6}{9}$ partly, in spite of the presence in the pupil of a thin, tense membrane.

DEADY.

McKinny, Richmond.—Papilloma of the Nasal Cavity.—*N. Y. Med. Jour.*, March 4, 1899.

A thorough consideration of the subject very concisely put, with enumeration of every case that has been reported up to date. Three very good photomicrographs accompany article.

PALMER.

Lester, Jno. C.—Operative Procedures in Staphylorraphy.—*The Lar.*, March, 1899.

Short consideration of ætiology is given, and then states that the age at which staphylorraphy should be performed is still *sub judice*. The former large number of failures probably due not only to the poorer aseptic procedures, but because it was usually postponed till patient could endure operation with local anæsthetic. Recently when we operate in infancy the results are more satisfactory.

Points affecting prognosis are : 1. age of patient, (infancy best,) 2. size of cleft, 3. thickness of relative edges, 4. resiliency of palatine tissues (mobility or ductility), 5. enlargement of faucial or Luschka's tonsils, 6. mycotic condition of same, 7. conformation of palatine arch (high or Gothic arch of Fergusson lessens tension on sutured tissues), 8. otitis media suppurativa chronica may infect wound and interfere with union.

The author varies the usual operation in the following manner.

First, the silver-wire sutures are introduced, beginning at the *angle.* Then the edges are divided with the long, sharp-pointed cervical scissors curved on the flat—denudation made in form of bevel. The usual incision is now made near hamular process to relieve tension. Finally the sutures are twisted with the regular wire twister and Sims shield. Sutures allowed to remain two weeks.

The author claims that the beveling of edges gives more denuded surface to unite, making union stronger. And the introduction of suture before denudation obviates the possible bleeding interfering with proper placing of sutures. Also that the wire not only hold edges in better apposition ; but not as apt to sever it when freshening edges.

Case is reported, in boy of nineteen years, of successful operation in this manner after two previous failures by other methods.

PALMER.

Stillson, Hamilton.—Some Experiments with the Giant Magnet.—*Ophthalmic Record*, March, 1899.

The author has been conducting a series of experiments with this new instrument and presents the following conclusions :

1st. The field of magnetization extending from the tip of the magnet, and appreciated by the vibration of a small magnetic needle, is about ten meters, varying of course with variations of the current.

2d. The actual working distance is usually contact of the eye with the magnet.

3d. With the eye at the distance of five millimeters from the tip of the magnet, and with six or eight amperes of current, the magnetic force will be about 130 gm.; multiplying the distance by three divides the force by seven.

4th. Dividing the weight of the object by two divides the attraction by six if the object be iron, and by about four if the object be steel.

5th. A paramagnetic body, as iron or steel, becomes a magnet upon being attracted by a magnet, and assumes opposite poles. Not only should the shape of the foreign body be recognized as fully as possible before operation, but the operator should determine what position he would prefer it to be in for extraction and which end he would desire to come foremost.

6th. Usually the best line of force to use is the line that radiates from the tip of the magnet. In Fig. 1 the directions of the lines of force from the magnet are indicated by knitting needles which have been attracted into the positions represented in the figure. The central line of force should be applied to the long diameter of the foreign body, if possible, in such a way as to place the foreign body in the position most favorable for extraction.

7th. The management of the foreign body will depend more upon its shape than is generally believed. If the object be disk-like it should be made to saw its way with the edge forward ; if it be pyramidal the point should be extracted first.

8th. To accomplish this purpose the eye and the magnet should be relatively in position and still before the current is turned on. It is a mistake to place the patient at a distance and cause him to approach the magnet gradually.

9th. A rheostat should generally be used with the current, especially if the body be large. Only a very slight current should be attempted at first or until the piece of steel is made to assume a position easy for its accouchement. The placing of the foreign body, it may be said again, in proper position for making its exit is of as much importance as is the proper presentation of the infant at parturition.

10th. Knapp says that foreign bodies in the vitreous are arranged by preference in the lower part of the vitreous, but experiments tend to show that this will depend upon the size and shape of the foreign body, the length of time it has been in the vitreous, and the character of the vitreous. For instance, blood in the vitreous will well up and float the foreign body toward the point of exit of the blood. This will be especially the case if the piece be small (less than 0.02 gm.). Then, too, if the piece be small and the vitreous somewhat fluid, the foreign body, if given time, may sink. The vitreous humors of different eyes differ greatly as to their liquidity. If the vitreous be not especially fluid, a small piece may float where it first lodged.

11th. Small pieces with great difficulty penetrate so far as the vitreous ; a piece weighing less than 0.02 gm. will often stop in the cornea or sclera. Great force is required to cause such a piece to pass on through the lens or through the sclera. They will often be caught in the iris (especially if the iris is somewhat

distant from the lens). They seem to be caught by the iris as a falling acrobat is caught by his net or the fish is caught by the seine.

In two of my cases in practice the large pieces had passed on through the lens into the vitreous, while the small pieces were caught in the iris (sifted out by the iris), where they remained.

12th. Small pieces that are behind the iris are difficult to remove by means of the giant magnet. Under its attraction the foreign body will cause the iris to bulge up, or be dragged one way or the other, but they will not cut their way through the iris. This attempt at their removal will not only fail, but the effort at removal will do great violence to the iris. A preliminary iridectomy, or at least iridotomy, should be performed; then a small hand magnet (the Hirschberg or other form) should be used in preference. This rule will apply also to small pieces under the conjunctiva. A small piece can be made to excavate its way around under the conjunctiva without making its exit, the conjunctiva in the meantime being bulged up into a wavy cone. (An attempt has been made in Fig. 2 to show this lifting up of the conjunctiva when a small piece of steel under it is attracted by the magnet.) The tip of the Hirschberg magnet inserted through a slit in the conjunctiva is preferable to the giant magnet in such cases. Snipping the foreign body out with forceps and scissors in such a case, or touching the foreign body with a small cautery point and letting the foreign body come out on the eschar, are equally successful ways of disposing of small pieces under the conjunctiva.

13th. Large pieces may be made to perforate the iris or conjunctiva if they have a suitable shape and are managed properly.

14th. Large pieces should have the current turned on slowly, and time should be given them not only to find their point of least resistance and place themselves in proper position to avail themselves of it, but to cut their way. Ffteen or twenty minutes' application of the magnet may sometimes be necessary. Pieces weighing in the neighborhood of 2 cg. may be made to swim about in the vitreous in any desired direction.

15th. Haab extracts foreign bodies from the vitreous by placing the point of the magnet at the sclero-corneal junction and causing the foreign body to roll around the edge of the lens and so on into position behind the iris, where the foreign body is

made to tear its way through the iris or made to come through a preparative opening in the iris. Small pieces may perhaps be best extracted in that manner, but large pieces almost invariably do damage to the edge of the lens and to the iris. A better plan with large pieces, especially with those that have entered through the sclera without injuring the lens, is, after definitely locating them and arranging them in proper position for extraction, to make a hole in the sclera nearest to where they lie if convenient and extract them through the opening.

16th. The best way for opening the sclera will often be with the galvano-cautery. It is less painful and seems to be less liable to sepsis. The slightly prolonged drainage afforded by it is often necessary for success.

17th. If the operator is in doubt as to whether the size and shape and location of the foreign body render it suitable of extraction from the vitreous around the edge of the lens and through the iris, and he wishes to make a tentative trial of the magnet, instead of applying the tip of the magnet to the sclero-corneal junction as recommended by Haab, a good plan is to remove the tip of the magnet and insert the eye into the opening at the end of the magnet as far as the sclero-corneal junction, applying the current slowly. Removing the eye from the magnet for repeated examination will enable the operator to determine what part of the ciliary region the foreign body will approach.

18th. It is not always best to endeavor to remove the foreign body from the opening it has made in its entrance. Of course a foreign body that has passed through the cornea and iris and lens and remains in the back part of the vitreous would not be removed through the cornea. A ragged piece that has entered through the upper part of the sclera or ciliary body, but which lies in the lower, anterior part of the vitreous, is often best removed through a cautery puncture in the lower part of the sclera.

19th. The giant magnet forms a good means of determining whether the foreign body be free in the vitreous or not. If the attraction of the foreign body causes much pain the foreign body may be judged to be attached to the choroid and sclera. Yet the giant magnet should seldom, if ever, be used for such purposes of diagnosis. Such haphazárd application of the force is almost certain to displace the foreign body disadvantageously.

20th. The writer is not experienced in the use of the sideroscope, but from the recent reports concerning it, it doubtless is far inferior to the modern improved X-Ray appliances in determining the size, shape, and location of a foreign body. In the writer's experience, however, fully half of the foreign bodies can be pretty definitely estimated by the ordinary means—ophthalmoscope, transillumination, etc.

21st. The question of anæsthetics is one that must be settled by circumstances; that is to say, by the character of the patient and the conditions of the case. Blacksmiths, iron molders, saw filers and others accustomed to getting pieces of iron or steel into the eye, can usually be relied upon to bear the pain and to place the eye in suitable position for the operation without an anæsthetic. Wood-choppers usually are not so tractable. In this wooded country, where steel wedges and steel sledges are almost universally used in splitting logs, wood-choppers furnish a large quota of cases. Their eyes are seldom struck, but when struck are injured badly. Large, sharp, jagged pieces from the edge of the hammer rebound from the wedge into the eye, where in many instances, they pass entirely through the eyeball and lodge in the bone behind. Many of the cases of foreign bodies in the eyes of wood-choppers require general anæsthesia. If the foreign body is easily seen and promises to be easy of extraction cocaine anæsthesia will be sufficient. In some instances the writer has, without apparent detriment, fortified the cocaine with the use of the suprarenal gland extract. Where general anæsthesia is necessary it should be profound, for the operator should have absolute control of the position of the eye for a sufficient length of time. DEADY.

Ingals, E. F.—Eversion of the Ventricle of the Larynx and Cyst Involving the Larynx and Side of the Neck.—*Jour. of Am. M. Assoc.*, February 18, 1899.

A man, thirty-nine years æt., presented just below angle of right jaw a tumor about 1½ inch in diameter. *History:* In 1890, an abscess developed where tumor now is, lanced and cured; in 1892 return of the same. When a boy, the patient was subject to tonsillitis. At present the voice is a hoarse whisper, attended by a peculiar vibration which was subsequently found to be caused by the vibration of the epiglottis—no dyspnœa.

Externally the tumor was elastic, almost dissipated by pressure, but returned when pressure removed. This pressure interfered with speaking. Laryngological examination disclosed "bulging of right side of the base of the tongue, crowding somewhat against the epiglottis. The swelling was about five-eighths inch in diameter, having a cystic appearance at fissure-like places where the glandular tissue had been parted by the swelling. The swelling extended downward at the right side of the larynx, crowding the epiglottis inward and causing bulging of the ventricular band so as to completely hide the right vocal cord and ventricle upon inspiration, and to hide the left cord and left side of the larynx on attempted phonation. The right side of the epiglottis was found to vibrate synchronously with the vibrations of the voice."

By means of aspirating needle two ounces of thick, mucilaginous, semi-transparent fluid were withdrawn, and then three-fourths of a dram of equal parts of carbolic acid and glycerine were injected. The external swelling disappeared, but the one in larynx did not, although this improved the voice and stopped the vibrations. The tumor in the larynx was a prolapsed ventricle, which was removed by a cold-wire snare.

PALMER.

Getchell, A. C.—Adenoid Growths, Their Relation to Deaf-mutism.—*Jour. Am. M. Assoc.*, March 4, 1899.

Clinical reports of three cases are given, one of which was greatly benefited in hearing. Strange to note, two of these cases were brothers, eight and nine years old respectively, and their cases seemed identical. The operation greatly improved the one, while not benefiting other at all; showing it impossible to tell exactly which class of cases may be helped.

A fair discussion of the subject follows, from which the conclusions below are arrived at.

"Adenoid growths and enlarged tonsils should be removed from deaf-mutes: 1. If there is any probability that they contribute to the deafness. 2. If they make more difficult the acquirement of spoken language in the oral pupil. 3. To improve the general health of the child.

"On the first two points the prognosis should be exceedingly guarded."

PALMER.

Black, Melville.—The Climate of Colorado, its Influence upon the Nasal Mucous Membrane.—*Jour. of Am. M. Assoc.*, March 4, 1899.

According to the experiments of Aschenbrandt and Keyser, 7715 grains of fluid are extracted from the turbinated bodies in twenty-four hours by a process of serous exudation.

The United States Weather Bureau gives the average relative humidity for 1895, '96, '97, of following cities: New York, 74 per cent.; Philadelphia, 68 per cent.; Chicago, 70 per cent.; Denver, 49 per cent., etc. The humidity of Denver is about 50 per cent. less than cities on Atlantic and Pacific coast. Therefore to saturate the inspired air in Denver, the nose needs to do about twice the amount of work. This necessitates an additional amount of blood to the turbinals.

Another factor is this: as Denver is one mile above the sea-level, the atmospheric pressure is only twelve pounds to the square inch (*i. e.*, three pounds less than at seaboard). Because of this lessened resistance of the atmospheric pressure, the entire superficial capillary system is dilated. The turbinal vascular plexuses are not the least to feel this dilating force. A greater amount of vasomotor nerve force is required to check this dilatation, and it usually requires from a few days to a few weeks to acquire this extra vasomotor nerve force, during which time the person is affected with symptoms of vasomotor rhinitis. But this is not sufficient to offset the dilatation entirely, therefore hypertrophy ensues, which in the natural course of events gives place to sclerosis of the tissues. This latter does not usually proceed to genuine atrophic rhinitis, but has the disagreeable symptoms of scabs, dry sensation, and post-nasal discharge. In ozæna the dryness of the climate makes it more difficult to remove the scabs; but the odor is less, because putrefaction is less rapid. The transition from the hypertrophic to the atrophic stage of a catarrh is more rapid in this climate.

PALMER.

Vansant, E. Larue.—Some Remarks on the Use of the Supra-Renal Gland of the Sheep in Nasal Surgery.—*Phil. Med. Jour.*, February 25, 1899.

As the aqueous solutions are unstable, he advises keeping the desiccated extract on hand, from which convenient solution may

be made as follows: extract gr. v., ac. boraci gr. xj., dissolved in aquæ camphoratæ and aquæ destillatæ āā. ℥ ss.

Or a glycerine extract may be purchased; this glycerol is stable almost indefinitely. Add ten drops of this to one dram of boric camphor solution and shake.

The method of use is this—before operation cleanse mucosa as usual, paint with five per cent. cocaine or four eucaine; in five or seven minutes thoroughly apply supra-renal solution with pledget of cotton. This seems to augment the anæsthetic action of the cocaine, thereby obtaining as strong anæsthetic action from a weak solution of cocaine as would otherwise result from a much stronger one. Beside this, the ischæmia produced very materially facilitates operating, because it lessens the flow of blood which so frequently obstructs the view of the operative field.

In acute coryza and hay-fever the nasal congestion is dissipated for a longer time than with cocaine or eucaine alone.

PALMER.

Grant, Dundas.—Remarks on Nasal Insufficiency Due to Exaggerated Prominence of the Anterior Arch of the Cervical Vertebræ.—*The Laryng.*, May, 1899.

Clinical report of a girl fourteen years of age; she was very tall, and acquired the bad habit of stooping. The adenoids had previously been removed. Respiratory obstruction recurred, and on examination there was a bulging of the atlas and possibly to a slight extent of the axis, accompanied with very little adenoid tissue. The latter was removed, but the principal benefit came from gymnastics under professional direction and her standing erect.

PALMER.

Fitz, W. H. A.—A Consideration of the Ammonium Salts, with Some Comparisons.—*The Hahne. Mo.*, April, 1899.

Ammon. carb.—The writer finds it curative in an excoriative coryza, with rawness and burning down the sternum. In nasal catarrh with obstructed nares at night, awakes gasping for breath, worse 3 to 4 A. M.; cough, dry tickling with hoarseness and great oppression from mucus in the chest; right side of throat sore.

Ammon. mur.—Coryza causing soreness of nose and upper lip, alternate stoppage of nostrils, throat is swollen with difficult

breathing and viscid phlegm ; throbbing in tonsils is characteristic.

Ammon. brom.—A sudden spasmodic cough with pains in the stomach, at intervals of a few minutes, paroxysm lasts for hours, aggravation lying down at night, tickling in larynx, with distinct whoop ; if expectoration, it is tough and stringy.

PALMER.

Brown, Lennox.—Laryngeal Epithelium of at least Two and a Half Years' Duration, which has not been Submitted to Operation.—*J. of L., R., and O.*, April, 1899.

A report of case presented at the Brit. Lar., Ryn., and Otol. Assoc. A man aged sixty-nine, business tutor, came under Mr. Brown's care 2½ years before, complaining of hoarseness of two years' duration. He had very good family history, and no other subjective symptoms. During first two years under observation lost fourteen pounds in weight, stationary last six months.

"On laryngoscopic examination, the left cord could not be seen, but the whole of the tissues on the left side were immovable and presented the appearance of a large, irregular mass of somewhat heightened color, and with warty surface. The right cord was also involved, but it moved freely. The laryngeal outskirts were much infiltrated. No glands could be detected externally, but there could be felt a slight outward spreading of the right thyroid."

The author considered it a case for what he called "watchful inactivity," which recommends in latest edition of his book in cases of intrinsic epithelioma in aged persons. Tonic treatment of iron and arsenic was administered. Dr. McIntyre mentioned a similar case that had been under his observation for seven or eight years.

All known methods of diagnosis except microscopical examination had been employed, and while diagnosis was not absolute, all members agreed with the strong probability of its correctness.

PALMER.

BOOK REVIEWS.

ANNUAL AND ANALYTICAL CYCLOPÆDIA OF PRACTICAL MEDICINE. By CHAS. E. DE M. SAJOUS, M. D., and One Hundred Associate Editors, Assisted by Corresponding Editors, Collaborators, and Correspondents. Illustrated with Chromo-lithographs, Engravings, and Maps. Volume III. Philadelphia, New York, Chicago: The F. A. Davis Company, Publishers. 1899.

Our opinion of this work has been very favorable since the issue of the first volume, and it is nowise diminished by the appearance of the one under discussion. The idea was a happy one, the combination of all knowledge obtainable of the various departures from the normal standard of health, with ætiology, pathology, differentiation, medical and surgical treatment, description of drugs, instruments, etc.; the articles being concise and written by specially competent men in each department, brought up to the date of issue by abstracts from the latest literature, and all arranged in cyclopædic form, handsomely illustrated and beautifully printed and bound. This was the prospectus, in brief, and it has been fully lived up to in every way.

The third volume includes subjects from "Dislocation" to "Infantile Myxœdema" (cretinism.) To this last article, written by Professor Osler and Dr. Norton, of Baltimore, the editor calls special attention, as he also does to the articles on "Exophthalmic Goitre," by Professor Putnam, of Boston; on "Goitre," by Professor Adams, of Montreal; on "Dysentery," by Dr. Flexner, of Baltimore; on "Endometritis," by Professor Byford of Chicago; on "Dislocations" and "Fractures," by Professor Stimson and Dr. Keyes, Jr., of New York; on "Gout" by Dr. Levison, of Copenhagen; and on "Hip-Joint Disease," by Dr. Reginald H. Sayre, of New York. There is also an analytical study of "Hysteria" and "Hypnotism," by Professor Eskridge, of Denver; the two last mentioned are well written and very interesting.

Dr. Sayre's article on hip-joint disease is also excellent and is well illustrated, the cuts including a radiograph of the pelvis, showing the differences between the healthy and affected side of the patient, a method of illustration which would have improved the otherwise commendable articles on dislocations and fractures.

The section on Gout is well worthy of perusal, as are those on Cocaine and Formaldehyde. We cordially recommend this fine work to our readers.

THE NEWER REMEDIES. Including their Synonyms, Sources, Methods of Preparation, Tests, Solubilities, Incompatibles, Medicinal Properties, and Doses as far as known, together with sections on Organo-Therapeutic Agents and Indifferent Compounds of Iron. A Reference Manual for Physicians, Pharmacists, and Students by VIRGIL COBLENTZ, A. M., Phar. M., Ph. D., F. C. S., etc., Professor of Chemistry and Physics in the New York College of Pharmacy; Author of "Handbook of Pharmacy"; Member of the Chemical Societies of Berlin and London; Fellow of the Society of Chemical Industry, etc. Third edition, Revised and very much Enlarged. Philadelphia, P. Blakiston's Son & Co., 1012 Walnut Street. 1899. 150 pages, octavo, cloth. Price $1 net.

The fact that this is the third edition of this book since 1895 serves to show that it supplies a want, and when we consider the large number of new remedies at the present time, a number that is being constantly augmented, we perceive at once the great utility of having them arranged in some shape which will enable us to obtain a definite idea of their uses and comparative value.

The author states in the preface that from 1882, when modern synthetic medication first came into being, to 1896, these products and their various proprietary combinations numbered about 800, and since 1896 there has been a further addition of 1200, which furnishes some idea of the enormous mass of therapeutic material which has accumulated, and which it is the object of this book to arrange and classify intelligently.

As complete a list of all modern medicinal synthetics as possible is given, together with the proprietary combinations made up by mixing certain of these, the new silver organic compounds, the animal remedial preparations, and the indifferent iron albumin remedies.

The various remedies are alphabetically arranged, with a concise statement of the physical and therapeutic properties of each, with synonyms and dose, and the formulæ of chemical compounds. Numerous cross-references are inserted for the convenience of the reader and consequent economy of his time. The position of the author gives his work the weight of authority and the little book should be of undoubted value to physicians and druggists.

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THE JOURNAL OF OPHTHALMOLOGY, OTOLOGY AND LARYNGOLOGY.

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SHALL WE CUT THE OCULAR MUSCLES? *

BY E. H. LINNELL, M. D., NORWICH, CONN.

IN casting about for a subject that would be appropriate to the present occasion, the remark made by a general practitioner at the meeting of the Ophthalmological and Otological Society at Atlantic City last June occurred to me. He said: "Tell us what to say to our patients when they ask us whether to have their eye muscles cut. That is what we want to know. So much indiscriminate cutting has been done, and so many individuals have been left in worse condition than previously after one or several tenotomies, that it is very difficult for us to know how to advise patients in this matter."

This is a very important and a very practical question, and in deciding it there are many points to be considered. My first reply to such a question would be: Refer your patient to a careful, thorough, and, especially, a conservative oculist. The majority of muscular inequalities, short of absolute strabismus, do not require tenotomy. It is true that much indiscriminate cutting has been done, and sometimes to the detriment of the patient. Like all new procedures, it had its over-zealous enthusiasts at first; but the pendulum after a time began to swing the other way, and we have

* Read before the Homeopathic Medical Society, State of New York, September, 1899.

learned to understand better the indications for surgical treatment in these cases.

In the first place, it is necessary to determine whether we have to deal with a true or a false heterophoria, a functional or an organic affection.

The relation between accommodation and convergence is so intimate that the two actions are necessarily combined. Branches of the same motor nerve, the third, are distributed to the ciliary and to the external ocular muscles. The simultaneous adjustment of the focus and the fixation of the near object are essential for distinct binocular vision. Convergence for a given distance under normal physiological conditions is associated with a definite amount of accommodation requisite to accurately focus upon the retina the rays of light coming from that distance. Hence, when the accommodation is excessive, as in hypermetropia, there is a tendency also to increased convergence of the visual axes, and one of two conditions will naturally result. Either the internal recti become over-developed, leading sometimes to actual strabismus, or there is a weakness and insufficiency at the near point which incapacitates the individual for continuous application. The reverse holds true in myopia, viz.: vision at a given distance is associated with less than the normal amount of accommodation. It is important to remember this fact, that in both hypermetropia and myopia the normal physiological relations between accommodation and convergence are disturbed.

By paralyzing the ciliary muscle we can temporarily suspend the association of convergence and accommodation, and the result will yield reliable indications for subsequent treatment.

If a true heterophoria is found to exist we should endeavor carefully to determine its nature and cause. This point is one that is absolutely essential to determine before deciding upon a given line of treatment. To arrive at a diagnosis, an understanding of the relative strength of the individual muscles under normal physiological conditions,

a careful testing of each muscle separately, and a comparison with the healthy standard are requisite.

Having settled these points, the oculist is then in a position to intelligently consider the question of treatment for any existing heterophoria. In the first place, he should endeavor to ascertain whether such a condition is the cause of existing symptoms. I have repeatedly called attention in print and otherwise to the influence of muscular anomalies in the causation of headaches and other functional nervous affections, but I think those who are familiar with my expressions on the subject will remember that I have always been conservative.

It is true here, as with other sources of nerve strain, that the effect varies greatly with the individual. One of a highly sensitive temperament will be seriously affected by a slight, deviating tendency, while, on the other hand, a person of phlegmatic temperament will suffer no apparent inconvenience from a heterophoria of a considerable degree. The effect depends not only upon the temperament of the individual, but upon the kind of work to which the eyes are subjected. Naturally, the student, the bookkeeper, or the seamstress will suffer more inconvenience than one whose occupation does not require close application.

Therefore, I wish to emphasize the statement that many cases, perhaps the majority of slight deviations, do not require any treatment. They are, as a rule, associated with some form of ametropia; and a careful correction of the refraction is often followed by a restoration of the muscular balance, or at least a disappearance of the asthenopic symtoms, which is all that is desired. In the first instance it was a *pseudo* heterophoria, dependent upon the unconscious effort to see distinctly, and not a structural defect of the muscle or its insertion. When this is true it may disappear gradually or only after considerable time.

The fitting of the frames is of almost equal importance with the selection of the lenses. The glasses should rest horizontally on the face, and the center of the lenses should correspond accurately to the centers of the pupils. Other-

wise a prismatic effect often results which is a direct source of muscular strain.

Where the asthenopic or nervous symptoms do not disappear after correcting the refraction, or where there is no ametropia, treatment especially directed to the relief or cure of the heterophoria must be undertaken, and the problem is this: Given an inequality in the strength of two opposing muscles, shall we weaken the stronger or develop the weaker one? Two strong muscles are obviously more desirable than two weak ones, and this is what we should aim to accomplish. If the weaker is of normal strength and the stronger largely exceeds the physiological standard, we may be justified in at once making a tenotomy. In the very large majority of cases, however, it is better to try to strengthen the weaker muscle. This is more successful with the internal and vertical recti than with the externi. Personally I have had very little success in trying to develop the external recti. Here, again, judgment and care are required. I myself am an illustration of it. I formerly suffered with "insufficiency of the interni," as it was called twenty-five years ago. Under treatment by an oculist of reputation, the muscles were developed from an ability to overcome the deviating tendency of a prism of 10° with base out, to one of 70°.

This was so much in excess of the normal physiological standard that the balance was thrown the other way, and it was ten years before I recovered from this injudicious overtraining.

The use of prisms and of electricity are the most effective means in my hands for accomplishing the desired results. Careful tests for both distant and near vision should be made with the modern instruments of precision at frequent intervals during the treatment, to ascertain when equilibrium has been reached, for the normal relation of the different sets of muscles varies in different individuals.

Failing to establish orthophoria in this way, we have to choose between palliation and a resort to surgical measures. We may often relieve the symptoms and secure free use of

the eyes by decentering the lenses, or by combining prisms with them, with the bases turned in the direction of the weaker muscles. Personally I use prisms in this way very frequently, and with the best results. I believe it is better practice than to make a tenotomy in a case of slight deviation, because so much judgment and accuracy is required that even the most expert operators cannot always estimate in advance the effect of a graduated tenotomy; hence the repeated cutting, "first of one muscle and then of another," that has been practiced, to the detriment many times of the patient, and the bringing into discredit of a procedure which is legitimate and often brilliant in its results, but which, in my judgment, should be kept in reserve as a *dernier ressort*.

To recapitulate briefly, in answer to the question quoted at the beginning of the essay, I will say:

First. Send your patient to a thorough, careful, and conservative oculist.

Second. Be sure that all errors of refraction, even though slight, have been carefully corrected. I am satisfied from my own experience that many nervous and asthenopic symptoms result from very slight refractive errors in persons of a susceptible nature, although I am aware that many oculists differ from me in this opinion.

Third. Be sure that the frames fit the patient's face properly.

Fourth. Be sure that a reasonable trial of systematic exercises for the development of the weak muscles, either with or without the use of electricity, has been made.

Fifth. If you have eliminated other sources of reflex disturbances, so that you are reasonably sure that the existing symptoms are directly dependent upon the heterophoria, advise tenotomy.

The following cases, illustrative of the foregoing remarks, may be of interest:

Case I. Miss F. is a cashier in a large mercantile house and works all day by an incandescent electric lamp. She complained of a constant dull pain in her eyes and head. She had a hyper-

metropic astigmatism of the left eye, together with a left hyperphoria, of 1°, an esophoria in distant vision of 1°, and an exophoria in accommodation of 4°.

Correction of the refraction gave her entire relief without treatment for the heterophoria.

CASE II. This case illustrates the result of training. R. D., aged twenty-five years, a student, complained very much of asthenopia, or twitching of the lids, and of frontal headache. He had been wearing + .50D.^{s} O. U. for near work.

Examination showed V. O. U. = $\frac{15}{15}$. He accepted glasses as follows, viz.: + .50D.^{s} ⌒ + .25D.^{c} ax. 90° O.D. and + .25D.^{s} ⌒ + .25D.^{c} ax. 75° O. S. He had a right hyperphoria of 8°, an exophoria of 16° in distant vision, and of 19° in accommodation. By exercise with prisms the hyperphoria entirely disappeared within a week, and in three weeks the exophoria was reduced to 1° in the distance and 3° at the reading point. Sphero-cylindrical lenses as above were prescribed for constant use, with entire relief of all his symptoms. I heard from him a year and a half later that they were still entirely satisfactory. In this case agaricus 6x was also prescribed, and undoubtedly helped in the cure of the pseudo-hyperphoria, which was evidently caused by spasm of the superior rectus.

CASE III. This case illustrates the effect of decentration of the lenses.

Mrs. A. complained of headache after using her eyes and a feeling "as of sticks in them." She had been using + 2.00D.^{s} O. U. for near work. Her vision was $\frac{15}{15}$ with each eye. She accepted + .25D.^{s} ⌒ + .50D.^{c} axis 90° O. U. for distant vision, and required + 2.50 D.^{s} in addition to the cylinders for near work, on account of presbyopia. She had an exophoria of 10° in accommodation. The lenses for reading were decentered 3 m'm inward, thus giving the effect of a weak prism for the relief of the exophoria.

CASE IV. In this case I made a tenotomy of the stronger muscle. Miss L., aged fifteen years, came to me complaining of frequent headaches, inability to use her eyes, chronic conjunctivitis, and scaly blepharitis. She was using glasses which were not satisfactory. Upon examination I found the following conditions viz.: V. O. D. = $\frac{3}{200}$. With −9.00D.^{s} ⌒ −1.00D.^{c} ax. 20° V. ⌒ $\frac{15}{30}$ and the radiating lines, of the astigmatic chart were all seen

with equal clearness. V. O. S$=.\frac{3}{200}$. With -8.00D.^{s} ⌓ -1.25D.^{c} ax. 180° V. $=\frac{15}{20}$ and the lines were right. L. h. 10° and left eye standing noticeably higher than the right. Es. $2\frac{1}{2}$° for distance, but no lateral deviation at the nearest point. Accommodation was quite deficient. With -5.50D.^{s} and cylinders she could read Sn.5 with ease, but got no nearer than ten inches. She frequently noticed that the lines overlapped in reading. A prism of $\frac{1}{2}$°, base down before the right eye, produced diplopia with no power of fusing the double images.

By exercise with prisms the hyperphoria was reduced to 8°. A tenotomy of the left superior rectus was done, which reduced the hyperphoria to 4°. Glasses were then given as follows, viz.: -5.50D.^{s} ⌓ -1.00D.^{c} ax. 20° ⌓ prism 2° up O. D. -5.50D.^{s} ⌓ -1.25D.^{c} ax. 180° prism 2° down O. S. for near work, and -8.00D.^{s} O. U. with cylinders and prisms for distance. Perhaps in this case a second tenotomy of the inferior rectus of the right eye would have been preferable to wearing the prisms, but the result was entirely satisfactory. She recovered from her headaches, her accommodation became normal, she resumed her studies and went to college.

THE OPERATIVE TREATMENT OF MYOPIA.*

BY DR. ROGMAN (OF GAND).

FOR some ten years the operative treatment of myopia by suppression of the crystalline has been systematically applied, and during this time a large number of works have been published on the subject throughout the whole country. In spite of the passion with which this question has been debated, it is still necessary that all the points connected with the question should be determined. The principal objections that have been made to the operation, a knowledge of the immediate dangers and the avoidance of those that threatened an eye still capable of more or less satisfactory function, deterred us for some time, and we determined to preserve an expectant attitude until sufficiently reassured by the results obtained by more hardy experimenters. To many ophthalmologists these dangers still appear so preponderant as to demand the interdiction of all operative intervention in myopia. Under these circumstances, it seems to us that it would of use to make known in their entirety such facts as have been presented to us in our experience.

CASE I.—Lucie V. D. S., thirty-five years, Gand. Myopia of about 17D on each side. In the right eye, which is the better, the visual acuteness with a glass, —16 D sph. is $\frac{5}{20}$ with difficulty.

Nov. 14, 1896. O. S. preparatory discission.

Nov. 26, 1896. O. S. extraction by suction.

Dec. 14, 1896. O. S. operation for secondary cataract.

* Translated from *Annales d'Oculistique*, January, 1899, by Dr. W. S. Pearsall.

Nov. 9, 1898. O. D. without glass for distance V = $\frac{1}{50}$. O. S. without glass for distance V $\frac{3}{50}$, with + 5D + 1'5 D 150 for distance V $\frac{5}{10}$, with + 11D sph. reads No. 1 Snellen at 30 centimeters.

Case II.—Sophie V. D. W., aged twenty-one, Biervliet. About 19D of myopia in each eye. The left eye with 16 D^s $\frac{3}{50}$.

Feb. 6, 1897. O. S. Preparatory discission.

Feb. 12, 1897. O. S. Extraction by suction.

July 2, 1897. O. S. Either without glass or with + 1D sph. V $\frac{5}{20}$. With + 5,5D sph. reads Snellen 1,25 at 25 centimeters.

Nov. 12, 1898. O. S. With skiascope — .5D axis vertical; with this glass V $\frac{5}{15}$; without glass V $\frac{5}{20}$.

Case III.—Isidore D. W., aged twenty-two, Oostacker. O. D. With skiascope, O. D. — 16D in the diameter of least myopia; O. S. — 19D in the diameter of least myopia.

March 20, 1897. Preparatory discission. O. S.

March 24, 1897. O. S. Extraction by suction.

April 15, 1897. O. S. Secondary discission.

April 20, 1897. O. S. Without glass V $\frac{5}{30}$.

April 8, 1898. O. S. Without glass V $\frac{5}{20}$ with difficulty.

The patient has had hemoptysis and is manifestly suffering from pulmonary tuberculosis.

Case IV.—Leonard L., aged thirty-one, Gendbrugge. In both eyes, choroiditis of the posterior pole and paracentral hemorrhagic points. Symptoms of asthenopia, especially marked in the left eye, for the left eye with — 20D, and for the right eye with — 16D, the visual acuteness is $\frac{5}{50}$. With the skiascope, O. S. 21D — 1D 135.

March 10, 1897. O. S. Primary preparatory discission.

March 15, 1897. O. S. Second preparatory discission.

March 25, 1897. Extraction by suction.

April 30, 1897. O. S. Discission of secondary cataract.

May 8, 1897. O. S. With skiascope, + 1D + 1D axis vertical. Indifferently either this glass or with + 2D cyl. axis vertical V $\frac{5}{20}$.

Oct. 26, 1897. The symptoms of asthenopia have diminished in the operated eye, and have increased in the other. O. S. Without glass V $\frac{5}{20}$ with difficulty.

Sept. 9, 1898. O. S. Without a glass V $\frac{5}{20}$. The skiascope shows + 1,25D + .5D axis vertical. This glass aids the vision but slightly.

Nov. 18, 1898. The results of the examination exactly the same. The patient complains of absolutely no asthenopia in the operated eye.

Dec. 12, 1898. O. S. Without glass V $\frac{5}{30}$.

Case V.—Julian D., aged sixteen, Poperinghe. O. D. myopia 22D and astigm. O. S. myopia 19D 3D 135.

May 10, 1897. O. S. Preparatory discission.

May 15, 1897. O. S. Extraction by suction.

July 2, 1897. O. S. With glass + 2DS $\frac{5}{15}$. With + 6D reads Snellen .8 at 25 centimeters.

Sept. 22, 1898. Without a glass he reads at 5 meters the Snellen type B, D, E, T, B, R., E., D., hence $\frac{1}{15}$ with difficulty. With +1D sph. he reads $\frac{5}{15}$ easily. With + 6D sph. reads No. 1 Snellen at 18 centimeters.

Case VI.—Evariste G., aged thirty-eight, Ruyen. O. D. — 16D. With this glass $\frac{5}{20}$.

June 1, 1897. O. D. Preparatory discission.

June 8, 1897. O. D. Extraction by suction.

June 25, 1897. O. D. With a glass + 2.75 sph. V $\frac{5}{15}$.

Sept. 24, 1897. O. D. With a glass + 4D sph. V $\frac{5}{10}$.

March 9, 1898. The patient presented a detachment of the retina of two days' standing.

Case VII.—Prosper V., aged seventeen, Schellebelle. O. S. — 22D. O. D. — 18D.

With these glasses, O. S. V. $\frac{5}{30}$; O. D. V. $\frac{5}{10}$.

July 20, 1897. O. S. Preparatory discission.

July 24, 1897. O. S. Extraction by suction.

August 10, 1897. Emmetropia. V $\frac{5}{30}$.

Oct. 15, 1897. O. S. Without glass V $\frac{5}{20}$, with + 4D sph. reads No. 1 Snellen at 20 centimeters.

Jan. 14, 1898. Condition unchanged.

Case VIII.—Raymond V. D., aged one, Zele. O. D. — 14D — 3D 150. O. S. — 9D — 6D 20. With these glasses O. D. V. $\frac{5}{50}$; O. S. V. with difficulty.

August 11, 1897. O. D. Preparatory discission.

August 18, 1897. O. D. Extraction by suction.

Nov. 4, 1897. O. D. with the skiascope + 1,5D + 1,5D 90. Without glass V $\frac{5}{30}$; the correct glass does not help vision.

Case IX.—Marie V. F., aged twenty-two, Hautem Saint-Lievin. O. D. — 22D and astigmatic. O. S. — 23D and astigmatic. With

22D, the visual acuteness is $\frac{5}{30}$ in each eye. After instillation of atropine O. S. — 22D 2D — 35.

Sept. 6, 1897. O. S. Preparatory discission.

O. S. Extraction by suction.

Sept. 29, 1897. O. S. With — 4,5D sph. V $\frac{5}{30}$.

Oct. 2, 1897. O. S. Without glass V $\frac{5}{30}$.

Oct. 23, 1897. O. S. Without glass V $\frac{5}{30}$; with skiascope — 1,5D — 2D 180°; with this glass V $\frac{5}{20}$.

Nov. 25, 1898. The skiascope shows the same condition. V. $\frac{5}{10}$ with or without the correcting glass.

Case X.—Madame D. S., aged thirty-six, Bruges. O. D. — 21D. O. S. — 21D — 2D 45. Posterior polar choriditis. Marked symptoms of asthenopia in both eyes.

Sept. 9, 1897. O. S. Preparatory discission.

Sept. 21, 1897. O. S. Extraction by suction.

Oct. 10, 1897. O. S. With — 3D sph. V $\frac{5}{30}$.

Jan. 3, 1898. O. S. Without glass V $\frac{5}{30}$. With glass — 2D sph. V $\frac{5}{10}$ and some letters of $\frac{5}{15}$.

June 25, 1898. O. S. Condition unchanged.

Case XI.—Elodie D. V., aged fifteen, Saint-Nicolas. Myopia 30D in each eye with the skiascope. With glass — 24D sph. sees nearly $\frac{3}{20}$ with each eye. Measured with the ophthalmometer the corneal surface shows 46D in all directions. In the right eye, the ophthalmoscope shows a small paramacular point, as of a former hemorrhage, together with a certain amount of thinning of the choroidal pigment.

Oct. 15, 1897. O. S. Preparatory discission.

Oct. 27, 1897. O. S. Extraction by suction. Upon withdrawing the instrument, a small filament of vitreous humor.

Dec. 28, 1897. The crystalline is still not completely reabsorbed. Without a glass V $\frac{5}{30}$.

June 22, 1898. Operation for secondary cataract.

June 25, 1898. With the skiascope — 3,5D — 1D 90. With this glass V $\frac{5}{15}$.

Case XII.—Achille V., aged twenty-two, Seveneecken. The skiascope shows O. D. — 20D — 1D 150 and O. S. — 20 D — 1D 30. With either these glasses or — 18D. V $\frac{5}{30}$. (The patient reads B C E).

May 11, 1898. O. D. Preparatory discission.

May 21, 1898. Extraction by suction.

July 12, 1898. O. D. Without glass V $\frac{5}{30}$. With a glass + 1,5D + 2D 80, V $\frac{5}{20}$.

August 13, 1898. Without glass V $\frac{5}{20}$ with ease.

Sept. 8, 1898. Without glass V $\frac{5}{10}$ with ease. With + 1D + + 2D 80V $\frac{5}{15}$ with ease.

Oct. 6, 1898. Without glass V $\frac{5}{20}$. With + 1D + 2D 80, V $\frac{5}{10}$ with a little difficulty.

Case XIII.—François V. D. P., aged twenty-one, Hemelveerdigem. O. S. — 22D — 1D 15. O. D. — 16D almost exactly. With —22D. O. S. V $\frac{5}{50}$; with — 16D O. D. V $\frac{5}{50}$.

With the ophthalmometer, O. D. horizontal diameter 47D, vertical diameter 48D; O. S. at 165 Javal, 49D, perpendicular to this, 47D.

Dec. 21, 1897. O. S. Preparatory discission.

Jan. 4, 1898. O. S. Extraction by suction.

Feb. 8, 1898. With skiascope, — 2,5D cyl., axis horizontal. With or without this glass V $\frac{5}{30}$.

Feb. 10, 1898. Discission secondary cataract.

March 7, 1898. O. S. — 1,5D — 1,5D 180°. This glass does not help vision, which is V $\frac{5}{10}$.

July 22, 1898. Condition unchanged. With glass + 3D reads letters — .8 Snellen at 30 centimeters.

Case XIV.—Barnarbe X., aged sixty-five, Oostacker. O. S. — 16D and astigmatic. O. D. Cataract.

Feb. 4, 1898. O. D.* Removal of shreds without iridectomy.

May 14, 1898. O. D. with + 2D, V $\frac{5}{10}$ Snellen. With + 8D reads No. 1 Snellen.

Sept. 27, 1898. Operation for secondary cataract.

Oct. 3, 1898. With skiascope, + 2D cyl. axis horizontal. With this glass or with + 2D sph., V $\frac{5}{15}$.

Nov. 2, 1898. Without glass V $\frac{5}{10}$. With glass + 2D sph. or + 2D cyl. axis horizontal V $\frac{5}{15}$.

Nov. 23, 1898. Condition the same. The ophthalmoscope shows the symptoms of former posterior polar choroiditis.

Case XV.—Joseph J., aged twenty-four, Gand. There is — 15D — 2D 180°, in each eye. With this glass V $\frac{5}{15}$ in each eye.

Jan. 19, 1898. O. D. Preparatory discission.

Feb. 5, 1898. O. D. Extraction by suction.

Feb. 13, 1898. O. D. Cortical layers. Skiascope, — 2D cyl. axis vertical.

Feb. 24, 1898. O. D. V. $\frac{5}{20}$.

March 19, 1898. O. D. Vision the same. Glasses do not help.

CASE XVI.—Jules V. P., 16 yrs., Cruyshautem. O. S. — 19D. O. D. — 19D — 1D. 180°. The ophthalmometer shows both eyes in the horizontal diameter 45,5D, in the vertical diameter 46D.

Feb. 19, 1898. O. D. Preparatory discission.

Feb. 26, 1898. O. D. Extraction by suction.

March 1, 1898. O. D. Without glass V $\frac{5}{20}$.

April 6, 1898. O. D. The same.

April 20, 1898. O. D. Skiascope, + 2,5D. With this glass V $\frac{5}{15}$.

CASE XVII.—Joseph G. aged thirty, Looz. O. S. — 8D sph. O. D. — 14D — 3 D 90.

May 31, 1898. O. D. Preparatory discission.

June 11, 1898. O. D. Extraction by suction.

June 22, 1898. O. D. With glass + 3D V $\frac{5}{15}$ with difficulty.

June 26, 1898. Vision the same. Without glass V $\frac{5}{50}$.

CASE XVIII.—Madame L., aged thirty-two, Gendbrugge (see Case IV). O. D. — 16D sph. Old hemorrhagic points, paracentral. Symptoms of asthenopia persistent.

May 17, 1898. O. D. Preparatory discission.

May 28, 1898. Extraction by suction.

Nov. 18, 1898. With skiascope, O. D. + 3,5D. + 1D 180°, with this glass V $\frac{5}{50}$. The symptoms of asthenopia still persist.

CASE XIX.—Emma W., aged fourteen, Roulers. O. S. — 17D, without astigmatism. O. D. — 3, 5D.

Aug. 25, 1898. Preparatory discission.

Sept. 3, 1898. Extraction by suction.

Sept. 20, 1898. O. S. Without glass V $\frac{5}{50}$. With + 2,5D + 2D 90 V $\frac{5}{10}$.

Nov. 14, 1898. O. S. Without glass V $\frac{5}{30}$. With glass + 2,5D + 2D 90 V $\frac{5}{10}$.

O. D. Without glass $\frac{3}{50}$. With a glass + 3,5D sph. $\frac{5}{10}$.

CASE XX.—Elisa P., aged sixteen, Malvern. O. D. — 14D — 2,5D 160. O. S. — 9D. 1,75D 180°.

Nov. 15, 1898. O. D. Primary preparatory discission.

Dec. 2, 1898. O. D. Second preparatory discission.

Dec. 5, 1898. Extraction by suction.

Dec. 12, 1898. O. D. + 2D + 3D 45. The visual acuteness is $\frac{5}{30}$ and is not improved by the correcting glass.

Dec. 16, 1898. Condition unchanged.

Case XXI.—Leonie D. K., aged twenty-six, Baerle. With the skiascope and subjective trial O. D. — 13D. O. S. — 18D with the skiascope and — 16D with the trial glasses. In the left eye there was a central choroiditis in the form of an almost vertical detachment.

Nov. 16, 1898. O. S. Preparatory discission.

Nov. 26, 1898. O. S. Extraction by suction.

Dec. 5, 1898. O. S. Cyclitic deposits on the inferior sector of the posterior face of the cornea; localized disturbance of the vitreous body; no photophobia; no pain; no symptoms of external inflammation.

Dec. 17, 1898. O. S. The deposits and the disturbance of the vitreous are diminishing rapidly. With the skiascope — 1D cyl. axis horizontal. Without a glass, the patient reads B, D, E, T, B, R, at 5 meters, hence V $\frac{5}{20}$; with the correcting glass B, D, E, T, B, R, T. , . , D, hence V $\frac{5}{15}$ with difficulty.

Jan. 10, 1898. All the symptoms of cyclitis have disappeared. Without glasses the patient reads B, D, E, T, B, R, F, E, B, D, B, T, L, F, M. . . , at 5 meters, hence V $\frac{5}{10}$; with + 4D reads the smallest Snellen type.

As the above table shows, the ages of the patients varied between fourteen and twenty years, most of them being about twenty. Aside from the deformity, some of the operated eyes presented a healthy appearance; but more frequently there were more or less pronounced changes, manifested sometimes by an irregular distribution of pigment, a marbled appearance, and sometimes by more or less ancient hemorrhagic points. The myopia present varied from 14D with astigmatism to 30D.

The difference in refraction produced by the operation varied between 16 and 26D, being most frequently from 19 to 20D. The results in this respect can only be considered as approximate; for no account is made of any spasm of accommodation which may have existed before the operation, and, moreover, as is well remarked by Sattler,* in

*Sattler, "Ueber die operative Behandlung der hochgradigen Myopie." *Bericht über die XXIVste Versammlung d. ophth. Gesellsch. Heidelberg*, 1895, s. 25.

high degrees of myopia and often in aphakia, the skiascopic examination cannot be made with the same precision as in ordinary cases.

In most of the cases two operations were sufficient to obtain the results reported: a preparatory discission and an extraction. Only six times in the twenty-one cases was it necessary to make a complementary discission.

We have been obliged to record neither accidents of infection nor complications resulting from excessive tension. A single eye was lost by detachment of the retina, occurring nine months after the operation.

Almost without exception the visual acuteness of the operated eyes without correcting glasses was better than with glasses before the operation. With nearly a single exception, the visual acuteness, with glasses in the two trials, was nearly double after the last operation.

Concerning the influence which the operation exercises upon the profound changes of the eye, we obtained in Case X. a marked amelioration which has been maintained up to the present time; but in Case IV. the good results produced at first seem to be less pronounced at present; for at her later visits, in December, the woman complained of asthenopia of the right eye (Case XVIII.) and detected a certain diminution of visual acuteness in the left eye (Case IV). In Case XXI. we have been obliged to record symptoms of cyclitis arising after the operation, which, it is true, are at the present time subsiding, but their remote consequences are nevertheless to be feared. These facts seem to leave in a problematical state the curative effects attributed to suppression of the crystalline in lesions of the deep membranes; and, on the other hand, they seem to show that, in so far as the prognosis of the operation is concerned, there is reason to take into consideration lesions of the posterior pole to a greater extent than is done at present.

To avoid, in a certain sense, the objections which the operation may present, all our cases have been operated on one side only, the bad side often almost useless. In one

woman in whom the operation upon one eye gave considerable amelioration of the asthenopic symptoms from which she suffered, we were entreated to operate on the second eye also after a period of a year and a half (Case XVIII.).

The preliminary discission was done with Bowman's needle, without previous iridectomy, as wide as possible, loosening the crystalline in different directions, without touching the posterior capsule, taking the precaution to produce no displacement of the lens. We have endeavored constantly and have almost always succeeded in not allowing the strong pupillary dilatation under the influence of atropine to subside, and thus in the onset protecting the iris from the compression produced in other conditions by the lenticular masses, which rapidly become swollen and opaque. The excellence of this procedure, recently recommended again by Fröhlich,* was long ago demonstrated by experience. It permits us to avoid the glaucomatous complications noted by divers authors as occurring in iridectomies, and finally in sclerotomies and their use in myopics. The aqueous humor may be preserved easily enough if, during the puncture of the cornea, the shaft of the needle is held in a plane perpendicular to the radii of the membrane, and, if these are transverse, at a proper obliquity. The electric photophore is of great use in watching this part of the operation. If one proceeds a little slowly it is almost always possible to see that the loosened layers of the crystalline become visible before the withdrawal of the needle.

After a period of time, varying in our experience from four to fourteen days, according to the progress of ripening and the condition of the eye, the extraction of the softened masses of the crystalline is accomplished by the method of suction, as practiced by Teale, this method being preferable to aspiration on account of the greater ease and greater precision with which it can be carried out. This

* Fröhlich, "Beitrag zur chihurgische Behandlung hochgradiger Kurzsichtigkeit," *Arch. f. Aug.* Bd. XXXV. s. 270.

	Age.	STATE OF REFRACTION.			COMPLICATIONS.	VISUAL ACUITY.			
						Before operation.		After operation.	
		Before operation.	After operation.	Difference.		Without Glasses.	With Glasses.	Without Glasses.	With Glasses.
I	35	− 17D	+ 5D	22D	Second Cataract. Operation.		> 5/20	3/50	5/10
II	21	− 19D	− 0,5D	19D			3/50	5/20	5/15
III	22	− 19D et ast.	O	19D	Second Cataract. Operation.			5/20	
IV	31	− 21D − 1D	− 1,25D + 0,5D	20D	Second Cataract. Operation.		5/50	5/20	5/20
V	16	− 19D − 3D	+ 1D	20D				5/15	5/15
VI	38	− 16D	+ 4D	20D	Detachment of Retina after 9 months.		5/20		5/10
VII	17	− 22D	O	22D			5/30	5/20	
VIII	16	− 14D − 3D	+ 1,5D + 1,5D	16D			5/50	5/30	5/30
IX	22	− 23D − 2D	− 1,5D − 2D	21D			5/30	5/30	5/20
X	36	− 21D − 2D	− 2D	19D				5/30	5/20
XI	15	− 30D	− 3,5D − 1D	26D	Slight loss of vitreous.		5/20	5/20	5/15
XII	22	− 20D − 1D	+ 1D + 2D	19D	Second Cataract. Operation.		5/30	5/20	5/10
XIII	21	− 22D − 1D	− 1,5D − 1,5D	20D	Second Cataract. Operation.		5/50	5/20	5/20
XIV	65	− 16D ?	+ 2,5D	18D	Second Cataract.		∞	5/30	5/15
XV	24	− 15D − 2D	+ cyl. 2D	17D			5/15	5/20	5/20
XVI	16	− 19D − 1D	+ 2,5D	21D				5/20	5/15
XVII	30	− 14D − 3D	+ 3D	17D				5/50	5/51
XVIII	32	− 16D	+ 3,5D + 1D	19D					5/50
XIX	14	− 17D	+ 2,5D + 2D	20D				5/30	5/10
XX	16	− 14D − 2,5D	+ 2D + 3D	20D				5/30	5/30
XXI	26	− 18D	− 1D	17D	Symptoms of cyclitis.			5/20	5/15

method of operating was suggested by the brilliant successes obtained by Professor Coppez and ourselves in traumatic and congenital cataracts.

In the special operations of which we are speaking, this method presents advantages over others in that it requires a smaller corneal opening, it permits a more complete extraction of the lens, it more frequently allows complementary operations to be dispensed with, it accomplishes a prompter cure; and, finally, it exposes the hyaloid membrane less to rupture and entanglement, which are the most frequent causes of infection and especially of detachment of the retina.

These two complications, in fact, constitute the greatest danger which menaces the eye by the extraction of the transparent crystalline. In the statistics that they have compiled, Gelpke* reports a detachment of the retina 9 times in 254 cases, being 2.5 per cent.; infection 7 times, corresponding to 2.7; Fröhlich,† in 572 cases reports 19 detachments, or 3.3 per cent., and 13 infections, or 2.2 per cent.

Entirely different arguments may be advanced on the subject of the relations existing between these operations and the production of detachment of the retina. Certain authors have very pronounced opinions in this respect. Thus, according to Otto,‡ in high degrees of myopia, detachments will occur no more frequently with than without an operation, all other conditions being equal. Von Hippel § and Vossius ‖ believe that the operation ought only to be considered the cause in detachments

* Gelpke und Bihler, "Die operative Behandlung der myopischen Schwachsichtigkeit," *Deutschmann's Beitrage zur Augenheilkunde*, Bd. XXVIII. s. 692.

† Fröhlich, "Ueber spontane und postoperative Kurzsichtigkeitsnetzhautablösungen," *Arch. f. Aug.*, Bd. XXXVIII., s. 25.

‡ Franz Otto, "Beobachtungen über hochgradige Kurzsichtigkeit un ihre operative Behandlung," *Graefes Archiv.*, Bd. XLIII. s. 323.

§ Von Hippel, "Ueber die operative Behandlung hochgradiger Myopie, *Bericht über die* XXIV*ste Versammlung d. ophth. Gesellsch. Heidelberg*, 1895, s. 25.

‖ Vossius, *Lehrbuch der Augenheilkunde.* Dritte Aufl., 1898, s. 112.

that immediately follow it. After several weeks, according to Gelpke,* the detachment ought not to be attributed to the operation.

Without denying the frequency of spontaneous retinal detachments in educated myopes, we nevertheless believe that the dangers of detachment created by operation should not be made light of, and in the cases observed by us we are compelled, without prejudice, to attribute to their influence the production of this accident, in spite of the fact that we could not find the direct cause and the hyaloid remained intact. The interval, nine months, which elapsed does not modify our opinion, when we consider cases of late detachments following traumatism, like those related by Horstmann † of Jutrzenka, where after incision of the sclerotic and the use of the electro-aimant, this complication was present once seven months and again five months after the operation.

Moreover, most operators who have reported detachments after extraction of the transparent crystalline, seem to accept this causation. Schreiber ‡ has witnessed a detachment after an interval of six weeks, Valude § after two months, Sattler ‖ once after four weeks and once after nine months, Fröhlich ¶ once after seven weeks again after five weeks, finally Thier ** three times two years and once a year and a half after operation.

According to Haab †† and Fröhlich ‡‡ the danger of detachment of the retina is especially the result of the ex-

* Gelpke und Bihler, l. c. s., 693 und 714.

† Horstmann, "Ueber den Verlauf der spontanen Netzhautablösung," *Archiv. für Aug.*, Bd. XXXVII. s. 193.

‡ Schreiber, "Die Indication der Myopieoperation," *Festschrift zur des 50 jahrigen Bestehens der med. Gesellschaft zu Magdeburg.*

§ Valude, *Bericht über die* XXII*ste Versammlung d. ophth. Ges. Heidelberg*, 1892, s. 129.

‖ Sattler, l. c.

¶ Fröhlich, "Ueber spontane u. s. w.," *Arch. f. Aug.*, Bd. XXXVIII. s. 12.

** Thier, *Bericht über die* XXIV*ste Versamml. d. ophth. Ges. Heidelberg*, 1895, s. 38.

†† Haab, L. c. s. 42.

‡‡ Fröhlich, L. c. s. 275.

treme facility with which procidence of the vitreous humor is produced during the extraction. In all the cases cited, in fact, except those of Valude and Sattler, this operating accident was present. According to Hirschberg,* moreover, he had not only loss of this fluid, but the discissions, especially multiple, interfered with hyaloid. Thus the case of Valude in its turn from an ætiological point of view does not form an exception. A suggestive remark in this relalation is that Thier, who makes deep preparatory discission right across the crystalline, has also the greatest proportion of detachments, four out of fifty operations, that is 8 per cent., more than twice the ordinary average.

The unfortunate relation that exists undeniably between these hernias, the escape or simply the discissions of the vitreous on the one side and retinal detachments on the other show themselves between the primary and the infectious complications. But this is a fact of ocular surgery so generally known that it only needs to be mentioned.

The study of the lesions of the vitreous body as regards the accidents to which they give rise, important on account of their gravity, acquires a still greater interest on account of the frequency with which they seem to be produced. We have already spoken of the extreme vulnerability of the vitreous body, as noted in a significant manner in myopia of high degree by Haab, Gelpke, and Fröhlich. We would also add that most of the operative procedures seem to take but little account of the proper management of the hyaloid. Without speaking of Thier, who divides it systematically at the outset, we note that Sattler † made a secondary discission "in a little more than half of the cases." "Because of this," says Gelpke,‡ "we have been forced to make one or several complementary discissions in most of the cases." "In all the cases," says von Hippel,§ "the posterior capsule was divided."

* Hirschberg, "Ueber die Verminderung der Kurzsichtigkeit durch Beseitigung der Krystallinse," *Centr. f. prakt. Aug.*, 1897, März, s. 71.

† Sattler, *Bericht. d. ophth. Gesellsch. Heidelberg*, 1895, s. 25.

‡ Gelpke und Bihler, L. c. s. 806.

§ Von Hippel, L. c. s. 21.

We believe that an entirely new method, which, by an improvement of the technique, allows the vitreous body to remain intact, marks an actual advance destined to diminish the proportion of unsuccessful results in extraction of the transparent crystalline.

After these considerations we have not hesitated to praise the method by suction with previous discission and to follow it in our practice. To say nothing of the decided diminution in the duration of treatment, which, with Gelpke * for example, is prolonged during at least 2.85 months, I would call attention to the fact that in our twenty cases (leaving out Case XIV. where an extraction of a fragment was made) the hyaloid was injured but once during the extraction and it was necessary to have recourse to a discission only five times, making fifteen times in twenty cases, or seventy-five per cent. in which the vitreous body was left intact.

Theoretically this result is perfectly comprehensible, if the operation of suction is compared with other methods of extraction. In one case there is a corneal wound more or less extensive, toward and into which, as observed by Haab,† the vitrous is very easily pressed; in the other case there is a narrow opening closed almost entirely by the shank of the instrument and approximating exactly after its removal, provided that it has sufficient obliquity through the corneal substance, and as a point of exit of the cortical masses, the eye of the canula located in front and directed at will toward the side where these masses are found.

In case of a rupture of the hyaloid membrane, there is risk of its becoming entangled in the wound at the point of rupture, when a simple extraction is made; on the other hand, if the accident is produced by suction, it only follows the withdrawal of the canula when this is done precipitately, which should be avoided.

By a suction prudently made the cortical masses are evacuated more completely than by simple extraction; on this principle one cause of the production of secondary

* Gelpke und Bihler, L. c. s. 688. † Haab, L. c. s. 42.

cataract is avoided, and the necessity of ulterior discissions is diminished.

By the method by suction I have no fear of the danger of creating a void in the interior of the eye. This objection is purely theoretical, could only occur with the most brutal execution as has been refuted by facts, which prove more, we believe, than the most subtle reasoning. The inferiorities which it seems to present in certain lights are largely counterbalanced by marked advantages, such as the maintenance of the integrity of the vitreous.

PHONETIC AND PNEUMATIC MASSAGE, AND ITS APPLICATION TO DISEASES OF THE EAR.

BY B. S. STEPHENSON, M. D., LOWELL, MASS.

PHONETIC massage is that form which is obtained by the use of sounds and consists of waves of regular length, or vibrations conducted from the point of production and carried to the middle ear by some method whereby the full effect is obtained with as little loss as possible. Now, the intensity of this wave is not sufficient to produce any mechanical massage of the drum, ossicles, or muscles situated in the tympanic cavity or to break up any adhesions or cause stimulation of the circulation. This can be easily proved by conducting the sound waves to a column of water and noticing the very weak action which even the loudest sounds will produce, or by observing their effect on the membrana tympani by the use of the otoscope. Pneumatic massage is that which is obtained by means of the forcible withdrawal of air from the external auditory canal by means of suction, thus producing a decrease of the air pressure against the entire surface of the drum and therefore obtaining a movement of the entire surface outward. It is claimed by some that this effect is produced by inflation of the middle ear via the eustachian, but if you will use the otoscope again, while you have an assistant inflate the middle ear, you will see that the force of the air current passes along the channel of least resistance which is beneath the ossicles and is expended on the inferior third of the membrane and causes

no excursion of the malleus handle outward. While using the otoscope with direct suction you easily perceive that the drum and ossicles move outward. The valsalvan or politzer methods, therefore, when used extensively cause a reduction of the elasticity and a pouching of the lower third of the drum. Now in all forms of massage which are applied to the body, a slow kneading movement is always used, because the muscles obtain their stimulus from their being compelled to perform their functions. Therefore I believe and think it should be proved that massage when applied to the ear should be used with sound beats of not more than 240 per minute and pneumatic of not more than thirty strokes per minute, lengthening that stroke when greater strength is desired. In cases of acute otitis after perforation of the drum, or in chronic cases where we desire to use continuous suction to remove secretion from the middle ear, I have yet to find a case in my practice that could not separate and count the beats at 120 per minute and as their hearing increases they easily count more rapid beats, and it is the same with the voice. A medium tone with the words slowly spoken and syllables separated will be heard by very deaf patients, showing that the auditory mechanism needs time to convey sound waves, and that it is this lack of quick perception that causes the patient's deafness.

Here is the weak point in phonetic massage instruments which have heretofore been used: the sound waves are so rapid that they cause confusion even for a person with good hearing. What must it be for a deaf person? Now following the same line of thought, pneumatic massage—and it is with this form that we get our mechanical massage—if we use our suction faster than thirty strokes per minute, we do not give the ossicular chain, its accompanying muscles and the drum time to use their own power of muscular contraction and thereby increase this by exercise, as by use of the otoscope we can see; but if we use a more rapid beat we simply produce an anæsthesia of the parts and very often dizziness and vertigo in sensitive patients, and it is this

which has disgusted so many of our leading aurists with massage. Now, in the first place, let us decide in what cases massage will help us in our work, and it is by carefully individualizing our cases, testing them with the otoscope, by attaching it to the instrument and bringing up by massage that which they lack, that we shall have success in our use of this method. And it is to the lax way in which we have used it in the past, and to our not combining the effects of sound and pneumatic massage, that the ill success of the past is due.

First, the class of cases which we meet the most are a hypertrophic catarrh with their resulting deafness. What can we do for them? In the first place, a healthy mucous tissue has got to be obtained, and this can only be done by stimulation, which must be gradual and can usually be accomplished; at the same time a sluggish sound-conducting apparatus has got to be awakened and taught to carry on its forgotten work, and this can be done by teaching the nerve, if we will give it work that it can do in its sluggish condition and as the vitality increases, carry it on to more rapid work.

Second, in otitis media (chronic purulent), the results are very satisfactory. In these cases use continuous suction, strokes 60 per minute, length of stroke three-quarter inch, as in these cases if we can keep the mucous surface free of secretion, nature will quickly heal. Following this up with sound and pneumatic massage we get in a large percentage decidedly improved hearing.

Third, in deafness from sclerosis, the results are more than fair, as where previously we have been able to accomplish nothing, we can now, where the general health and recuperative power of our cases are good, get improvement which will aid them greatly in hearing ordinary conversation. In reports which I have received from aurists who have been using the Stephenson Machine long enough to be able to give a conservative opinion, they claim that they have been successful with it in twenty-five per cent. where they have failed before. The reason why massage

of the ear has been unsuccessful in the past has been: (1) It has been applied in the same form to each patient; (2) It has been used with such rapid vibration that it has harmed rather than helped.

In the machine of which we are speaking, first, we have the sound massage separately, varying in beats from 120 to 240 per minute, thus giving a slow, distinct beat, easily counted by the deafest patient. This also gives a variation in pitch without overtones. Second, we have direct suction, varying in speed from 30 to 60 strokes per minute, also in length of stroke from ¼ to ½ and ¾ of an inch on the piston, thus giving time with the slowest rate of speed for the distinct muscular and ossicular action between strokes, and with the speed of 60 strokes giving continuous suction in cases of chronic otorrhœa.

Third, we have in the last instrument a combination of sound massage at 120 beats per minute, and suction and pressure, the ratio being always two volumes of suction to one of pressure, as the attraction of the magnet is twice that of the weight of the armature on the bellows. This can be varied from 0 to two atmospheres by raising the magnet away from the bellows. Thus by simply adjusting the sound beats on the two telephones, one at 120 the other at 240 beats, the suction pumps, one at 1¼-inch stroke, the second at ¾ of an inch stroke, the phono-pneumatic pump at ½ atmosphere, the second at 1¼ atmosphere, we have an instrument with which we can treat each case without further change and without trouble to ourselves, and in so doing we shall obtain results which before have been impossible.

These can all be used at once or separately, by the use of switches on the table, and by telling the assistant what we wish used we have no further trouble and a larger number can thus be treated, and our time be utilized in full.

We all know that such men as have used massage scientifically, not looking upon it as a cure-all, but as an adjuvant without which but little can be done in chronic deafness, tinnitus aurium, or chronic otorrhœa, have obtained results

which have been looked at either with suspicion or as illusory ideas impressed upon the patients through psychic influence, and disappearing like mist when the physician's influence was removed from them. I know of a number of patients who have been removed from direct observation for three years, who have retained in full the benefit they obtained under treatment by massage.

It was my pleasure recently while at Atlantic City, to meet with men from all parts of our broad country whose observations coincide with mine, after use of this method for a sufficiently long time to have discovered its benefits.

"MOUTH BREATHING AND ITS PHYSIOLOGICAL EFFECTS."*

BY J. E. MANN, M. D., LOUISVILLE, KY.

THE office of the respiratory apparatus is one of the most important of those connected with the maintenance of life. Through this apparatus there passes into the body that which is essential, and through it is thrown off that which is inimical to animal life.

The result of respiration is a process of oxidation. In this process of oxidation there is required of pure oxygen, as extracted from the air in the pulmonary vesicles, seven times the bulk of the body, or for the average person in twenty-four hours, by weight, one and one-half pound. Undue exercise creates a demand for more oxygen, so that the athlete may require twice as much.

In the individual of ordinary occupation, the expired air contains 4 per cent. of carbonic acid gas, representing by weight one and one-half pound for twenty-four hours.

That this amount of oxygen may be taken into the blood and the blood freed of an equal amount of carbonic acid gas, there must be taken into the lungs of the ordinary person air equaling in bulk 140 times that of the body, every twenty-four hours. This, in the normal breather, is accomplished by eighteen respirations per minute.

The respiratory apparatus begins with the tip of nose and ends with the pulmonary vesicles, which are compartments in the pulmonary lobules. It is in these compartments, the

* Read before The Kentucky State Homeopathic Medical Society, May 25, 1899.

partitions of which are a network of capillary blood-vessels, that the oxygen is transferred to the blood. These vesicles are dilatable, and it requires about ten respirations to completely change the air in them, thus affording ample time for the exchange of oxygen for carbonic acid gas.

Nature has so proportioned us that the amount of capillary surface thus presented to the air is sufficient to absorb the needed amount of oxygen, and to discharge the carbonic acid gas, but does not make any allowance for defects which interfere with the proper amount of air from which to absorb the oxygen. She attempts it in the only way possible, and that is by an increased heart action.

This is found in all cases of impaired respiration, but particularly noticeable in blowers of wind instruments, where the pulmonary vesicles become dilated and the residual air increased, showing an interference with ventilation of the vesicles. The same condition maintains, though to a less degree, in whatever form the obstruction to respiration presents.

The obstruction most commonly met with occurs in the upper respiratory tract, between the tip of nose and the larynx, and designates the patient as a mouth breather.

It is generally thought that the respiratory tract begins with the larynx; but this is not true, it begins with the tip of nose, and in the oro-pharynx is crossed by the alimentary canal—the epiglottis acting as switchman at this crossing, to carefully direct the air and food to their proper terminals.

Should the nose or naso-pharynx get out of repair, get clogged up, as it were, preventing an adequate supply of air, the mouth very kindly opens up to assist in the work. In this way sufficient space is provided for the entrance of air; but there is lost a very important function, of which too little is known, or if known, to which too little importance is assigned, viz., that of warming and moistening the inspired air to a degree of tolerance to the delicate membranes of the lower respiratory tract, and particularly the pulmonary vesicles where the oxygen is given off.

This function is one of the most important ones of the

nose. In the normal nose there is an average daily transudation of a watery serum through the membrane covering the turbinated bodies, equal to one-third the amount of urine passed in the same time. This too, without creating any annoyance, for it is all taken up in warming and moistening the inspired air.

It has been conclusively proven that the mouth does not materially increase the warmth of the air passing through it, and also that there is no considerable amount of moisture or warmth transmitted to the air by the bronchial or pulmonary mucous membranes.

The amount of moisture given off by the nose is regulated by the vaso-motor system, and is supplied to meet the varying states of humidity and temperature. We know by experience that the effect of a severe cold air is to increase the blood supply of the turbinateds, and hence an increase of serum for warming purposes. We know also that cold to a mucous membrane contracts the blood vessels and stimulates the secretion of mucus. We can now realize what must necessarily follow the introduction of air into the lungs unwarmed and unmoistened.

There is an increased mucous secretion terminating in bronchorhea, and attending cough. There is a contraction of the blood-vessels and a lessening of the caliber of the air-vesicles and a consequent increase of residual air. Respiration is more rapid and not so deep.

The vesicles lose their elasticity, and the amount of surface presented to the air for absorption of oxygen and giving off of carbonic acid gas, is materially lessened. The heart increases its action in order to compensate for the lessened caliber of the capillaries, and increases by its good intentions the natural waste of the body and the increased production of carbonic acid gas, without gaining the necessary amount of oxygen or providing a commensurate carrier for the waste.

In short, there is a lack of oxidation and an increase of carbonic acid gas in the system. A slow form of carbonic acid gas poisoning.

What parent would allow a child to, or where is the adult that would continue to occupy a poorly ventilated room wherein there was a leaky gas-jet? Still this is virtually what is being done by every mouth breather.

The nasopharynx is that space above the soft palate and uvula and back of the posterior nares. Into this space open the eustachian tubes, one from each middle ear. It is here the air is furnished to maintain a pressure on the inner surface of the tympanic membranes equal to that on the outer surface. The air in the middle ear must be constantly changing, and this ventilation is materially assisted by the current of air passing the eustachian orifices during normal nasal breathing.

The air for the middle ear must be as warm as that for the lungs, and if the warming chambers are occluded and cold air has to be forced up from the oro-pharynx, there will surely be salpingitis and consequent catarrhal deafness. If the nasopharynx is obstructed by adenoid growth, suppuration of middle ear is almost sure to follow.

The nose has another function, which though not so pleasant to contemplate, is nevertheless quite important, and that is a drainage canal, or sewer if you please, into which are emptied the normal and ofttimes abnormal secretions of the antrums of Highmore, the frontal, ethmoidal, and sphenoidal sinuses. These secretions are carried off by the air which passes through the nose in the normal breather. Stop this passage of air, and you have a dead sea of animal liquids, maintained at a temperature warranted to prove a model culture field for all the bacteria that may apply.

With these physiological facts well in mind, can we longer wonder why the simillimum fails to permanently relieve the distressing and ofttimes alarming symptoms of the mouth breather?

Mr. President, I am a homeopath from principle, and have as much faith in the curative powers of the infinitesimal doses as anyone present, and it is this very faith that leads me—after failing to get the proper response from

my carefully selected remedy—to seek more earnestly for the real cause of the trouble. In these cases it is easy to find.

Any one of you can, with a head mirror, proper nasal speculum, small probe, absorbent cotton, and a 4 per cent. solution of cocaine, determine if there is obstruction in the nasal passages. The most common causes of nasal obstruction are polypi, deflections, and exostoses of septum and hypertrophy of turbinated bodies. The use of cocaine in examining a nose is of the utmost importance, because it contracts the soft parts that are not hypertrophied, thus giving us a clearer view of the entire space.

By its use we are enabled to correctly diagnose between a congestion and true hypertrophy, because there is no shrinking of hypertrophied tissue under cocaine.

For the examination of the nasopharynx, if you are not skilled in the use of the throat mirror, you can use your finger, and sweeping it carefully around this space, determine if there is any obstruction there. The treatment of these cases is, from the ætiology given, and our present knowledge of drug action, necessarily surgical.

Through the kindness of Drs. Smoot and Kosselman, whom I want to thank for their trouble and efforts in helping to make this dry subject more interesting, we have a few cases to present that will impress you with the above truths more forcibly than any tongue or pen.

After seeing these cases, and hearing their histories, we believe you will all agree with us that the subject is well worthy of consideration. And if we succeed in causing to be opened up to a single one an old avenue through which may flow the properly prepared ingredients for a new life, we will feel amply rewarded for our efforts in this line.

THE FUNCTIONALITY OF THE RETINA AND THE PATHS OF LUMINOUS IMPRESSIONS.*

BY DR. RENAUT,

Professor of Histology on the Faculty of Medicine at Lyons.

THE establishment of an anatomical theory of vision has long been sought and many have been successively proposed, histological facts more or less contorted having ordinarily been brought into the service of each. I shall not propose another one here. I shall limit myself to indicating or recalling what the variations of form are that are attributable to the functionation of certain retinal cells; and also, by comparison of the relations of the retinal neurons with each other and some known physiological facts, to deduce a small number of corollaries making out, so to speak, the progress of luminous impressions in the retina and optic nerve.

(*a*) It follows clearly from observed histological and histo-physiological facts that the retinal zone which receives the shock or luminous impression is the layer of rods and cones; and that these two neuro-epithelial formations of the retina, the visual cells and the pigmented epithelium, are the parts directly impressionable by the vibrations of the luminous ether. As far as the rods are concerned, the destruction of the retinal red and the formation of opto-grams remove all doubt of this fact. In destroying the red on their surface, the luminous parts of the retinal image exert upon the external segment of the rods a sudden chemical action, we may say explosive. Consequently a

* Translated by Dr. W. S. Pearsall from the *Rev. gener. d'Ophthalmol.*

new molecular movement is introduced. As for the cones whose external segment is not charged with retinal red, we have been unable to find proof of such a chemical action. But it is known by the experiments of Van Genderen and Engelmann,* that under the influence of light they experience a shortening coincident with the swelling of the nucleus of the visual cell, as stated by L. Dor.† There also, then, the action of light introduces a material modification, and the effects of functionation can be histologically distinguished in the element in the act of performing its function. In the visual cell of the rods ready for the impression the external segment of the rod is found to be charged with erythropsin. In those that have performed their function the erythropsin is destroyed. In the resting cell the red is gradually reproduced. The condition of rest is then that of taking on a charge of red; that of activity is the consuming of this charge according to a particular rule varying with the predominant molecular condition, as the yellow which is inactive toward violet is lost and the chemical rays are active here as in photography. For, we know, by the experiments of Lipmann, what radical modifications of orientation the chemical rays set up in a sensitive plate. All of which shows that through light the visual cells receive a new motion which is neither on the order of light nor is it nervous in character; for, so far, nothing has been found in the functional activity of nervous cells like the changes taking place in visual cells, for example, sensory cells directly and strongly stimulated. It could not be altogether said that the retinal purple gives the key to the phenomenon of luminous impression, since we know of retinæ destitute of rods. But the history of erythropsin allows us to conclude, at least, that the immediate phenomenon following a luminous shock is, in the visual cell, a rapid variation of its primitive molecular state, produced by a sharp photochemic

* Van Genderen-Stort. *Pfluger's Archiv.*, t. XXXV.

† L. Dor, "Du rôle des mouvements de pigment retinien et des cônes dans les phénomènes de la vision," Lyon, 1896.

action exerted upon the external segment, striated transversely, of the rod certainly and probably of the cone. As for the hypothesis of Max Schultze, who supposed that the cones alone received impressions of color while the rods received luminous impressions pure and simple, it was founded particularly upon the absence of cones in the retinæ of night birds. I have also seen these retinæ furnished with cones. To my mind, a fact that is of greater value in determining the specific rôle of the cones, is the presence of their colored globule in all non-mammals. It is clear that these globules allow only rays of their proper color to pass to the external segment of the cone. The external segment then can only be stirred to molecular movement according to the rhythm induced in its substance by the photochemic action of this same color. It must then afterward excite electively in the same way the corresponding bipolar cells. It is evident that animals such as reptiles, that have only the visual cells of the cone and the colored globule, as does the histologist looking at colored preparations in the light of an Abbe condenser with a full opening. It is probable, then, that, in effect, the visual cells corresponding to the cones are differentiated to receive first of all colored impressions.

(*b*) The adherence of the peripheral extremity of the external segment of the rods and the cones with pigment epithelium, and of the pigmentary fringes at the external limit, connects the pigmentary formation and that of the cells closely one with the other, or as parts of a whole. Consequently when the fringes contract to produce a lowering of the pigment for the chemical rays of green or violet, the upper part of the external segments, which are of lamellated form and very elastic, ought to shrink markedly. It increases, on the contrary, in the movements of raising up the pigment and relaxation of the fringes corresponding to the position or attitude of obscurity which they also hold for yellow or red light. The play of the pigmentary movements then introduces the variations of tension of the external segments. If we

examine the observed fact pointed out by Max Schultze, that the maximum deviation of the transverse striations, corresponding to the maximum elongation of the external segment, is very obviously equal to seven-tenths μ, which is the length of a red wave, while the maximum deviation corresponding to the greatest relaxation is four-tenths μ, that is to say, the length of a violet wave, we are forced to admit that the variations of tension introduced by the play of the pigment cells tend toward a true accommodation of the impressionable parts of the visual cells to conditions of proper receptivity for the different rays of the spectrum.

Moreover, as I have invariably held, the movement of lowering the pigment about the rods and cones acting slowly when the retina passes from darkness to light, has another object: to protect the receptive parts of the visual cells from too intense luminous action, by a modifying action like that given by a smoked glass; and probably also to furnish the elements for their repair, used up during a long period of action.* Moreover the movement of the pigment is affected not only by the direct action of light, but also, as shown by Van Genderen-Stort, when the body (of a frog, for instance) is exposed to the sun, while the head is kept in the dark; this is said to occur by virtue of a reflex. The lowering is produced only from the green to the violet, that is, for the rays of the spectrum using up erythropsin and forming optograms. So when the pigmented epithelium of one kind receives the signal of the presence of light within the limited extent of the spectrum,

* I expounded this view in my course first published by the *Faculté de Lyon*, January 30, 1882 (Lesson 25), and I have maintained it ever since. It has been resumed with much talent and recently supported with new facts by L. Dor, one of my students. Dor observed, with reason, that the slowness with which the movements of the pigment took place did not permit them to be viewed as the agent in the transformation of the movements of the ether into nervous vibrations. Such an hypothesis did not explain vision in albinos nor the laborious though real accommodation of the eye to ambient light when the pupil has been paralyzed by eserine or atropine. All the facts observed lead, on the contrary, to the admission that the pigmentary movements have for their object a retinal accommodation.

it proceeds to act upon its fringes and set their pigment in motion in such a way as to determine the position, the arrangement, and the tension of the external segments, with a view to its suitable reception and in such a way as to insure a proper impression. It adjusts the external segments of the rods and also those of the long cones to each luminous vibration; for, contrary to the announcement of Boll, the raising and lowering of the pigment are found in retinæ furnished with cones only, as well as in those possessing both rods and cones. I have this fact positively in the chameleon, in which all the cones are long and adherent by their peripheral extremities to the pigmented epithelium.

(*c*) All this shows that the retinal zone, corresponding to the layer of rods and cones entwined in the threads of the pigmentary fringes, presents a field where the variations of tension of the external segments are executed. In the dark the transverse striations of the external segments elongated. The separation of the bands of this striation corresponding sensibly to the length of the luminous waves between the green and red. The pigmentary fringes not contracted but elongated by the elastic tension between their epithelial cells and the external border, may, on their part, vibrate with great amplitude and small force. Under retinal illumination, on the contrary, the external segments are shortened between the pigmented epithelium and the external border by the contraction of the pigmentary fringes. Provoked by direct or reflex means, the pigmentary movements act in the same way as regards the external segments (Van Genderen-Stort). What shows although the function of protection from strong-colored light by the pigment, the disengagement of the rods and cones to feeble light or monochromatic yellow and red, the variation in the condition of the external segments to which they are joined are not only favorable but indispensable to the reception of visual impressions by the visual cells, is that when the pigmented epithelium is separated from the retina it preserves its normal current; but the constant

and positive electric variation excited by the luminous shock is no longer produced (James Dewar and MacKendrick). For the electrical variation whose lost time is sensibly equal to that of the luminous sensation (a tenth of a second), whose amplitude diminishes and is finally lost by fatigue, which reappears when the electrically exhausted retina has had a sufficient rest in darkness, shows that the retinal neurons have received their sensory excitation from the visual cells. This excitation no longer reaches them when the union between the external segments and the pigmented epithelium has ceased to exist. The sensory cells remain, but from that time they are no longer adapted to the reception of the waves of luminous ether, nor of transmitting them to the bipolar cells after having modified them.

(*d*) Under normal conditions, the sensory cell whose excitable extremity is struck by a luminous ray which it is prepared to receive, undergoes, on account of this shock of the luminous wave, a variation from its proper molecular movement, a variation that is elective and special for the different rays of the spectrum, capable in its turn and capable alone of exciting nervous movements in it or the corresponding bipolar cells, while the light may rest directly without effect upon it on these same nervous cells. Otherwise expressed, the visual cell is set in vibration by the luminous ether; and its proper movement, of a given rhythm, produced by that of the luminous wave, but altogether different from it, acts as an elective excitant to the bipolar neuron whose receptive extremities are carried to it. The visual cell is, then, an element for receiving the luminous physical movement and transforming it into a movement exciting the primary sensory neuron, the bipolar ganglionic cell.

(*e*) It is possible now to formulate an hypothesis as to the rôle of the bipolar cells.* They constitute evidently, as affirmed by Ramon y Cajal, the radical neuron par excellence, conductor, and, I believe, also transformer of

* *Cf.* Ranvier, "Traité techn. d'histologie," 2me edition, p. 759.

excitation received from the visual cells which they project upon the cells of the optic ganglion. I say transformer, because the excitation of the retinal ganglion, under certain circumstances, does not excite the luminous flash perceived by the brain. On the contrary, excitement or section of the optic nerve does produce it. It is then between the visual cells and the unipolar cells of the optic ganglion that the *esthesiogenic* nervous movement takes its origin. These are the great multipolar cells of the optic ganglion which speak to the cerebral centers the language of form and color. It is in these that the transformation takes place, since their axis cylinders are incapable of transmitting any impulse other than one that will excite a luminous sensation in the centers. The point of application of the bipolar cells corresponding to the rods is situated in the plexiform network that stretches along on the level of the layer of the bodies of the great multipolar cells of the optic ganglion. It corresponds to the network of white fibers forming the covering of these ganglonic cells and always outside their proper capsule. This point gathers up the impression received from a large number of rods. It localizes in each cell of the optic ganglion more or less extensive visual areas, whose impression is transmitted as a whole to the cerebral optic centers by way of the axis cylinder of this cell.

The point of application of the bipolar cells corresponding to the cones, on the contrary, consists of an axis cylinder arborization arranged tangentially in one or several layers of the cerebral plexus, with respect to innumerable reception protoplasmic expansions, arising either from multipolar cells of the optic ganglion corresponding to this layer (unstratified) or from those that distribute their dendrites in several (multistratified) or in all layers (diffuse). The placing in connection of the two neurons, bipolar and multipolar, is made by means of the meshwork of white fibers; and the passage from neuron to neuron is probably effected by a modification of the white fibers, which in some way open a path. A bipolar cell with

protoplasmic prolongations gathers the impulses from a great number of cones, except in the macula, where there is one pigmented cell corresponding to one visual cell and a bipolar cell single with respect to the path of this impulse. With the exception of the macula, then, the receptive extremities of the large multipolar cells of the optic ganglion sum up the impressions of a large number of cones, and project the sum upon the bipolar and pyramidal cells of the cerebral optic centers by their axis cylinders forming the optic fibers. On the other hand, several multipolar cells may, by virtue of their multiplicity and the extent of their protoplasmic prolongations, receive their excitation from a large number of bipolars also connected in the same way with other multipolars in the same layer of the cerebral plexus or in different layers. In this way producing a re-enforcing, a possible substitution, and projection upon multiple points of the cerebral ganglia, from impulses received at the periphery as the result of a shock of luminous ether upon a single sensory cell. In the macula, on the contrary, the protoplasmic expansion of the protoplasmic cells is reduced in extent and is found, in the white network, almost exclusively in relation to the axis cylinder arborization of each bipolar cell, controlled, as I have said, by a small number of cones or by a single one. On this principle the cerebral localization of the visual impression is rendered much more precise for visual impressions received from the yellow spot.

(*f*) The two ganglionic formations from the tangential expansion of the retina are absolutely distinct from each other. The first, the horizontal ganglion of the external plexiform layer, is formed from cells whose short protoplasmic branches surround the bases of visual cells, and whose axis cylinders make up, to a greater or less extent, the rings and even the extensive network about the bases of other visual cells distant from the first. As I have shown above, it acts evidently as an arrangement for association of the visual cells, as was supposed by Ramon y Cajal. He realized the diffusion on the surface and the

communication with a series of bases of visual cells, of a localized excitation in some of them only by a luminous shock; at the same time (probably in a different manner) that this same excitation progresses radially toward the multipolar cells of the optic ganglion, through the path of the bipolar cells corresponding to the visual cells directly struck by the visual ray. A similar action, on the surface, seems also to be developed in the granules (spongioblasts): either having a moderating action such as Ranvier supposed and carrying its action to the receptive prolongations of the multipolar cells so as to maintain their excitability within the limits necessary to good cerebral perception, or that its action consists in giving rise to the variations of sensitiveness in the receptive filaments and axis cylinders of the plexus itself. The termination of the axis cylinders of the centrifugal fibers of the optic nerve in the zone of unipolar cells and in other layers of the cerebral plexus, in relation principally with cells having large rectilinear prolongations, seems to indicate that the action of the spongioblasts, whatever it may be, is subordinate to stimuli which they receive from the ganglionic cells of the cerebral optic centers. If such a view be correct, there would be in the retina three concentric zones of intraretinal accommodation corresponding, (*a*) to the pigmented epithelium, (*b*) to the horizontal ganglion of the plexiform layer, (*c*) to the formation of the cells resulting in the *ensemble* of unipolar cells or spongioblasts.

APHONIA.*

BY FRED D. LEWIS, M. D., BUFFALO, N. Y.

ALTHOUGH aphonia is but a symptom, yet it is one that I consider worthy of special attention. The causes of this distressing condition may be various; and as the tendency of the successful treatment of disease to-day is to eradicate the cause, so in cases presenting with this symptom, the cause, if possible, must be determined. Often the examination with the laryngeal mirror will reveal to us all that we desire to know, while at other times a very careful study of the case will be necessary. The most common causes are as follows: reflexes, tuberculosis, nodular laryngitis, central or local paralysis, diphtheria, rheumatism, syphilis, anæmia, and inflammations.

To consider exhaustively each of these diseases in their relation to the throat would be impossible in the time allowed to this paper. Let us, then, take a few of the principal causes and review them briefly. First, in my experience, stand reflexes; and among the reflexes those resulting from a large middle turbinated body pressing on the septum, or pressure in the same locality caused by nasal polypi are most frequent. However, septal spurs or ridges, or pharyngeal hypertrophy or congestion, may be the exciting cause. How useless would be the administration of a drug, or any local applications, without surgical treatment in such cases?

Some years ago I suffered with an almost complete

* Read before the semi-annual meeting of the New York State Homeopathic Medical Society, held at Binghamton, September 19 and 20, 1899.

aphonia, doing for it whatever might be suggested to me without any relief, until a nasal polypus was removed, when my voice returned.

I believe, also, that frequently the generative organs are the exciting cause. This can readily be understood when you notice the marked change in the voice often resulting from castration or ovariotomy.

Following the reflexes, it is but a short step to nervous or hysterical aphonia. Here is where the physician may make for himself the record of a brilliant cure, mislead himself as to the action of some particular drug, or worry himself needlessly over an apparently stubborn or intractable case. The diagnosis must be well established, that the case may be properly handled. After the exclusion of reflexes, the symptoms, the appearance in the examination with the laryngeal mirror, and the age and sex of the patient will generally give the required information. The symptoms are generally negative ; there is no soreness, no pain, swallowing is accomplished without difficulty, but the patient has no voice. This is also the case in reflexes or paralysis ; but with the hysterical patient there is frequently a normal cough or laugh, which is never present in any other form of aphonia. The appearance of the vocal chords in attempted phonation shows some movement, but not complete apposition. The movement of both chords is symmetrical. In paralysis one chord is usually affected, or when it is bilateral there will be complete inaction. Again, hysterical aphonia generally occurs in girls between puberty and the establishment of the menses.

The treatment should be directed toward establishing in the mind of the patient a thorough confidence in the ability of the physician to effect a cure. A remedy, or even sac lac, may be given with the assurance that the voice will return at or before a given time, or some simple or irritating preparation or galvanism applied locally with the same assurance.

My first case of hysterical aphonia gave me considerable anxiety. I could find no cause whatever for the loss of

voice; and the patient was very nervous and feared further trouble during the night, as the attack had come on quite suddenly early in the evening; the family stood around awaiting my decision, and I did not know what to do. I took all the symptoms I could obtain, and relied on the administration of the indicated remedy. The girl had made an imperfect attempt at her first menstrual flow the month previous. The next evening I was again summoned and remedy changed. The same proceeding was repeated the evening following. There being no further call, I presumed that Homeopathy had added one more leaf to her crown of laurels, until a month afterward I met her sister, and, asking how the patient was, she informed me that having gone to another doctor he used the cautery at the base of the tongue and the aphonia was cured. I now see that my indecision acted unfavorably, and the impression conveyed by my colleague, with the assistance of the hot platinum point, had effected the desired result. A mustard plaster to the chest or a hot foot-bath might have been just as efficacious.

In tubercular aphonia and nodular laryngitis the mirror should at once determine the cause, and the treatment then is simple. In the early stage surgeons may be called for in tubercular laryngitis, if the tubercles can be removed, and locally the application of lactic acid and orthiform. These cases, however, are usually beyond cure before applying for treatment. The appearance of nodules on the chords is generally due to faulty vocalization, confined principally to singers, and will frequently disappear after proper methods are employed in the use of the voice. Occasionally the removal of the node is necessary.

Cases due to paralysis, diphtheria, rheumatism, syphilis, or anæmia must be treated on general lines, local spraying or swabbing being used only for temporary relief.

With all that I have said in my remarks, however, we must not forget that we have a materia medica that is exceedingly rich in remedies acting profoundly on the throat,

the most prominent of these, perhaps, being belladonna, opium, phosphorus, arsenicum, mercurius, and plumbum.

I might cite many cases where the indicated remedy has acted like magic in the cure of aphonia. Where cases present and hysteria can be excluded, and where operation is not called for, the symptoms should be carefully collected, studied, and the indicated remedy administered. This remedy may be outside of those drugs I have named, in fact, may be one of the little known and rarely used medicines. If cures can be effected in a few days by internal medication, as I have frequently seen them in cases that were treated unsuccessfully for long periods of time by men who depended on local treatment, they add much to the reputation of the physician, and certainly lessen the sufferings of the patients.

The points I would wish to emphasize in this paper are first, determine the cause of the aphonia; second, if mechanical or constitutional, remove cause either surgically or medicinally, and third, remember the resources at our command in our materia medica, and cure by natural law rather than expect results from local measures.

CONJUNCTIVITIS.

BY R. G. REED, M. D., CINCINNATI, O.

MISS M., aged twenty years, presented herself for treatment September 15, 1898, at which time both the ocular and palpebral conjunctivæ were red and swollen.

There was a profuse flow of tears, with some discharge of mucus, and intense photophobia, although the corneæ were perfectly clear. With the exception of the intense photophobia, the case presented nothing more than the ordinary symptoms of simple acute conjunctivitis.

The interesting feature of this case was its history.

The young lady is of German parentage, well nourished, dark hair and eyes; always strong, and never having suffered from any severe general illness. Her father and mother are living. She has seven sisters living and one dead. All of those living are in good health. The one dead was never strong, and died at the age of twenty-eight years, never having menstruated.

At the age of eleven years, the patient first suffered from conjunctivitis; the attacks coming at intervals of two weeks and lasting three days each time. These attacks were of such severity, and so frequent, as to cause her to discontinue school work. After leaving school, but at what age she does not remember, the intervals lengthened to one month, and still continued until one month after I first saw her—the length of the attack still remaining three days. The periods of the eye trouble seem to have no relation to the monthly cycle, as they seldom appear at that time. The menses, which function was established at the age of eigh-

teen years, are regular, painless, and apparently normal. As the patient was first seen during an attack, and owing to the profuse flow of tears, she was given rhus tox. 3x; but in one month returned with the usual attack. She was then given pulsatilla 3x on account of the aggravation in the house and in a strong wind, and amelioration in the open air. She was requested to return when the eyes were not inflamed, for an examination of the refraction, which resulted as follows:

V. O. D. $\frac{20}{40}$.

V. O. S. $\frac{20}{30}$.

Under mydriasis:

V. O. D. $\frac{20}{40}$ + 1.50D^s ⌔ + 1D^c. Ax. 90° = $\frac{20}{10}$.

V. O. S. $\frac{20}{100}$ + 2.25D^s ⌔ + 1D^c. Ax. 90° = $\frac{20}{10}$.

She was given the full correction less + 25^s, and the pulsatilla 3x continued. After this she had no further attack for five months, when the trouble again appeared; the remedy was repeated, and from that time to the present the relief has been complete.

In a case such as this, there is a question as to how much credit is due the remedy, and how much the cure may depend upon the correction of the refraction.

ABSTRACTS FROM CURRENT LITERATURE.

Oliver, C. A.—Description of a New Method for the Implantation of Glass Balls into the Orbital Cavity.— *Phila. Med. Jour.*, May 27, 1899.

The author describes his method as follows: "After several trials with the well-known plans of Frost, Lang, and Morton, I hit upon a modification of the methods of Frost and Morton, which consisted in first securing the horizontally placed recti muscles by a single suture, and then the vertically placed ones by a second single suture, in such a way that their free ends could be neatly sutured together over a glass ball which is placed within Tenon's capsule; the whole being covered with the conjunctival membrane, thus securing a strongly protected and permanent stump over which the artificial eye, when properly molded into place in accordance, for example, with Snellen's plan, will admit of as good appearance and of as great motion as that which can be secured by evisceration with the insertion of artificial vitreous.*

The procedure which in its latest details has given me the best results with the least amount of reaction (in fact, frequently less than with ordinary enucleation) is practically as follows:

The conjunctiva around the entire corneal limbus is freed from the globe and dissected sufficiently far back so as to expose the tendons of the four recti muscles. The tendinous extremities of the muscles are made ready for separation from the globe. A half-curved needle with its point directed toward the corneal border, and holding a long piece of catgut thread, is carried directly through the belly of the internal or the external rectus muscle, and brought out of the tendon of the muscle just behind the

* The operation must not be confounded with Fox's method of inserting glass balls into eyeless sockets from which the organ has been previously removed.

remaining attachment to the globe. The muscle thus secured is cut loose from the globe just as in an ordinary tenotomy. The catgut thread is drawn through as far as practicable, and a sufficient length of the strand of gut is left untouched in order to allow a loop broad enough for free manipulation between it and the eyeball. The needle is carried over to the opposite side of the cornea, and, with its point directed away from the cornea, is made to transfix the tendinous belly of the other lateral muscle, which is secured and freed from its connection with the eyeball.

The vertically placed muscles are dealt with in a similar manner.

The four recti muscles are thus freed from their tendinous attachments to the globe, and each pair of muscles is secured in a loose sling that can be tied the moment that this becomes necessary.

Working in between the broad loops of catgut attached to the ends of the muscles that are held apart by an assistant, the eyeball is enucleated with as much of the optic nerve as may be desired, without any difficulty.

The cavity previously occupied by the globe is thoroughly cleansed and a water-tight glass ball of about three-fourths the size of the normal globe is dropped into place.

The ends of the lateral rectus muscles which are held by the lower and the first-placed catgut thread are neatly trimmed and sutured together. The same is done with the two ends of the vertical rectus muscles. The circular opening made by the cut edges of the overlying conjunctiva is lengthened into a lozenge by a couple of horizontal snips, and is carefully brought into linear apposition by a series of silk threads.

The operative field is covered by a gauze protective-bandage upon which iced compresses are placed.

If the operation be done under strict asepsis, without any undue violence, and the parts be kept thoroughly freed from blood-clots and loose or hanging tissue, and if iced compresses be employed for the first twenty-four to forty-eight hours after the procedure, there will be absolutely no reaction, and the surfaces will be ready for the insertion of an artificial eye in a very brief time—in fact, earlier than after an ordinary enucleation, while the cosmetic results will be fully as good as those that are gotten by Mules' method.

The operation is offered on trial for cases in which abscission, keratectomy, or evisceration with insertion of artificial vitreous are inadvisable or impossible, such as in many cases of phthisis bulbi, extensive ruptures of the sclera, etc., thus giving opportunity to obtain well-fitting and freely mobile artificial eyes in cases in which it is necessary that a globe without any of the other orbital contents must be sacrificed. DEADY.

Janson, Eiliv.—A Remarkable Case of Tertiary Syphilis.—*New York Med. Jour.*, April 15, 1899.

Case of a woman, twenty-seven years æt. *History:* Mother of patient died of phthisis. Nine years previous to treatment contracted syphilis, for which was treated only five months. One and a half years ago had ulcerated sore throat. The present condition commenced about eight months ago as a pimple with red areola on bridge of the nose; this spread until now, on examination, the following condition was found.

Present condition.—On removal of the cloth from her face the patient presented a pitiable sight. Where the original site of the nose had been, I found a large elliptical-shaped ulcer, which commenced at the junction of the nasal and frontal bones, spreading laterally close to the inner canthus of both eyes, extending downward, involving the cheeks within a quarter of an inch of the malar eminence. Of the nose there was nothing left but the tip, which, from lack of support, fell downward and forward, hanging over the upper lip. The bony framework of the nose was entirely gone; both the nasal bones and the nasal processes of the superior maxilla were destroyed. Not a vestige of the cartilaginous septum or the vomer was to be found. The inferior and middle turbinated bones were destroyed; the superior turbinated were still intact, but red and swollen. Suspended between them, part of the ethmoidal plate could be seen. On inspection of the floor of the nose, I found a large perforation, of the size of a quarter, involving the soft parts and the hard palate, through which the patient could protrude her tongue at will. On looking into the mouth I found the soft palate entirely destroyed, the posterior pillars of the fauces nearly gone, also extensive ulceration of the whole pharyngeal wall and vault.

Treatment.—Potassium iodide sat. sol. 15 drops t. i. d., in-

creasing 2 drops each day till toleration reached at 216 drops per day. To the ulcerated surface a spray of corrosive sublimate (1-4000). In five weeks all is healed. The tip of the nose was raised up and it, having adhered to the right side of ulcer, filled considerable of the depression. PALMER.

Ranunculus bulbosa.—*Revue Hom. Fran.*, tome ix. No. 6, *Hahn. Mo.*, April, 1899.

"In Hay Fever it is an important remedy. There is burning and itching of the eyelids; the nose is stopped up, particularly evenings; pressure at the root of the nose; prickling, itching and burning in the nose; a sensation of something crawling into the nose posteriorly. This disagreeable sensation causes snuffling, sneezing, and blowing of the nose. At the same time there is hoarseness, acute stitching pains in the chest, and general muscular pains." PALMER.

Dr. Blackwood.—Silicea in Retropharyngeal Abscess.—*The Am. Hom.*, May 15, 1899.

A case of recurrent retro-pharyngeal abscess of seven years' duration in a lady thirty-seven years æt., with following symptoms, was cured by sil. 30. No return, now in three years. Interval of recurrence four to six weeks. The patient was oversensitive, nervous, irritable, weakly, palefaced, and night sweats. Abscess always preceded by severe pain extending down right arm, which is immediately relieved by evacuation of pus. PALMER.

Posey, Wm. Campbell.—A Clinical Study of 287 Cases of Hyperphoria.—*Philadelphia Medical Journal*, April, 1899.

The author's conclusions from an analysis of 287 cases of hyperphoria of at least 1 degree, as shown in more than one examination, are as follows.

1. When properly searched for, hyperphoria of 1 degree or more will be found to exist in about 13 per cent. of all cases of refraction, and as regards its frequency, it occurs quite independently of whether it is associated with exophoria, esophoria, or lateral orthophoria. Hyperphoria occurs most frequently to the extent of 2 degrees.

2. Although, in general, the degree of hyperphoria seems to

bear a close relationship to the degree of esophoria and exophoria existing in any case, increasing or diminishing in proportion as the lateral muscular deviation increases or diminishes, the existence of a high degree of esophoria or of exophoria does not necessarily imply the presence of hyperphoria.

3. In like manner, high degrees of ametropia need not be accompanied by hyperphoria, for I found an equal number of cases of both myopia and hypermetropia of high degree in which hyperphoria was absent. In these latter cases, however, it was noted that there was but slight deviation in the lateral muscles, while, on the other hand, it was found that high degrees of ametropia, associated with high degrees of lateral insufficiencies, were almost always attended with hyperphoria.

4. In anisometropia, on the other hand, hyperphoria is present in all cases in which the difference in refraction between the eyes is at all marked, even when associated with a moderate degree of esophoria or exophoria. When there is orthophoria in the lateral meridian, or but little difference in refraction between the eyes, hyperphoria is rarely present.

5. Strabismus, both convergent and divergent, is invariably accompanied by hyperphoria, of which at least one-quarter of its total amount is latent.

6. Latent hyperphoria is of frequent occurrence, and occurs quite independently of the state of the lateral muscles, although it shows a greater disposition to occur when associated with exophoria (2 per cent.) than with esophoria (1.67 per cent.), or with lateral orthophoria (1.12 per cent.).

7. Unlike latent hypermetropia, latent hyperphoria develops quite independently of age, occurring with as great relative frequency before the third decade of life as thereafter. It is equally liable to develop in myopia as in hypermetropia, but shows a greater tendency to be associated with exophoria (2 per cent.) than with esophoria (1.67 per cent.), or with lateral orthophoria in 1.12 per cent.

8. The correction of errors of refraction is not sufficient in the majority of cases to bring about a disappearance of any existing hyperphoria, as I have found that hyperphoria makes itself manifest the longer glasses are worn ; the increase in the hyperphoria occurring whether vertical prisms have been incorporated into the formula or not.

9. Headache is the most frequent symptom, that of supra-orbital variety predominating. In a small proportion of cases it will be unilateral, usually on the same side as the eye with poorest vision. Typical attacks of migraine may be expected in about 5 per cent. of all cases of hyperphoria. DEADY.

Malm.—A New Velum Retractor.—*Ann. des mal. de l'Or.*, June, 1898 (*J. L., R.*, and *O.*, April, 1899).

The instrument, made on the pattern of Beloc's sound, consists essentially of a cannula, curved at its extremity, and carrying a central sliding rod, to the end of which are attached two curved springs, which tend to diverge when thrust out of the cannula. The instrument, with the diverging springs concealed in the cannula, is passed into the nose in the manner of a catheter. When in position, the sliding rod is pushed home, and the ends of the springs make their appearance on either side of the uvula. When adjusted, the whole is kept in position by a ring, which presses on the upper lip. It is especially constructed with a view to asepsis. PALMER.

Kicer, Gottlieb (Copenhagen, Den.).—**Latent Empyema of the Accessory Cavities of the Nose.**—*The Laryng.* February, 1899.

This is a short article difficult to extract, as it is a condensed rendering of conditions found in the sinuses in two hundred post-mortem examinations. The frequency of occurrence of disease in different sinuses is given in following table:

AGE.	Sinus Maxillare.	Sinus Frontalis.	Sinus Sphenoidale.	Celluli Ethmoidales.	Total.	No. of Post-mortems.
Under 10....	..	..	..	..	..	5
10–20	1	0	5	0	6	7
20–40	13	2	6	1	22	44
40–60	16	2	8	4	30	72
60–80.....	9	9	10	2	30	72
	39	13	29	7	88	200

A point to be noticed is the great difference there is between the

frequency of sphenoidal sinusitis in proportion to that of other sinuses, and the generally accepted opinion.

Concomitant empyema was found in 21 subjects. In 7 of 13 cases of frontal sinusitis the corresponding maxillary was diseased.

In 135 cases the average measurement of the frontal sinus was

	Height	Width	Depth
Males	2.5 cm.	2.4 cm.	2.0 cm.
Females	2.1 cm.	2.0 cm.	1.6 cm.

And the sphenoidal measurement was, length 2 cm.: breadth 1.5 cm.; the same in male and female. PALMER.

Bernard.—Acute Pneumococcus Sinusitis without Suppuration.—*Rev. Hebd. de Lar., O., R.*, August 13, 1898. (*J. L., R.*, and *O.*)

Two cases of acute sinusitis associated with coryza are reported, in which the non-purulent discharge was constantly bloodstained, and resembled pneumonic sputum. The condition in both cases was of an acute character, and after a few days (eight or six) resolution took place with rapidity. In both severe neuralgic pain was experienced, and there was a marked degree of general lassitude. Pneumococci were present in abundance.

PALMER.

Woskressensky, Joseph.—The Action of Euphthalmine upon the Eye.—*Therapist*, June 15, 1899.

The following extracts are from the author's inaugural dissertation on the above subject:

The hydrochloride of euphthalmine was used in 5 and 10 per cent. solutions.

The first subject of my experiments was the action of euphthalmine upon the external eye. The euphthalmine solution was dropped into the eye of the patient to be examined, whose head was bent backwards. I never used more than 6 drops at a time. Except a slight burning, lasting at the most for twenty seconds no other irritating symptoms were observed; perhaps in 10 per cent. solutions a temporary injection of the conjunctival vessels took place; but I never observed periocular injection, changes in the color of the iris, or flow of tears. The glaucoma

patients bore the remedy excellently, and did not complain of pains or increase of already existing troubles.

I will now come to a very important point, viz., the action of euphthalmine upon the pupil, which forms the chief advantage of this remedy, and owing to which it has been introduced to medical practice. My experiments in this respect are divided into three groups.

The first group is the determination of the time of the beginning of dilatation of the pupil. The second concerns the duration of the action; and the third, comparative experiments with euphthalmine, atropine, esserine, and pilocarpine.

As regards the first group, I can say that I have found that a maximal dilatation of the pupil takes place thirty to forty minutes from the beginning of the experiment. With 10 per cent. solutions it is a little sooner—though not always—and remains a little longer. The largest dilatation is, in the majority of cases—no matter what concentration of solution used—about 4 mm. more than in the beginning. In all (twenty) cases treated by me I noticed the disappearance of the reaction of the pupil to light, of sensibility of convergences, which gradually reappeared.

As regards the second group, I came to the following conclusions: That the higher concentration of the solution is of lesser importance—because 5 and 10 per cent. solutions give nearly the same result—the difference in the duration of the action, however, is about 1½ hour and more (the stronger the solution the longer the duration). I consider it unsuitable to use other solutions than 5 per cent.

The comparative employment of euphthalmine and other remedies dilating or contracting the pupil, which are the subject of the third group, shows clearly the difference in the power of causing dilatation possessed by each of the various remedies employed, but in the cases in which atropine was introduced after euphthalmine, I noticed a larger dilatation of the pupil than in *vice versâ*, which, in my opinion, is explained by the fact that the diffusion into the anterior chamber is increased. As regards the experiments with esserine and pilocarpine, euphthalmine in 5 per cent. solutions decreases the action of these myotics, and in 10 per cent. solutions destroys their action completely. A further question which I investigated was that of the action of euphthalmine upon accommodation. Besides experiments with

euphthalmine alone, I also made comparative experiments with euphthalmine, atropine, and the other mentioned myotics, in order to ascertain, on the one hand, the action upon the ciliary muscles, and, on the other hand, to find out the spasmodic action of esserine and pilocarpine. The "far point" of the eye does not change its position during the whole period of mydriasis; the "near point" reaches its maximum—at 4 inches when using a 5 per cent. solution, and 5½ inches with a 10 per cent. solution of euphthalmine—in thirty to forty minutes from the beginning of experiment. This maximum only applies to certain cases; as a rule, it is, according to my observations, up to 2 inches at a duration of accommodation between forty-five minutes and an hour. The whole duration of the latter depends upon the concentration of the solution, and its termination does not take place at the same time as the termination of the dilatation of the pupil.

In older people (over forty years) no moving away of the "near point" is observed at all. The comparative experiments with atropine and the myotics show a paralyzing action of euphthalmine on the ciliary muscles, increasing the action of atropine, while with esserine and pilocarpine I found a marked decrease of the former—in pilocarpine sometimes complete absence of action.

The experiments regarding the action of euphthalmine on intraocular pressure, which were made with the object of checking previous reports, have been carried out by me by means of the tonometres of Dr. Maklekow (*Medizinskoje Obosrenje*, vol. xxiv., 1884). I experimented on patients having different degrees of intraocular pressure, increased or reduced from normal.

In no case did I notice any change in the intraocular pressure after euphthalmine, not even in very sensitive cases of glaucoma.

The influence of euphthalmine upon the diffusion into the anterior chamber was ascertained according to the colorimetric method of Dr. Belljarminow (*Wjest Ophthalmologie*, 1893), and is not very important. The coefficient of absorption is 1.4—that is, the absorbability from the conjunctiva into the anterior chamber increases in proportion to normal by 1.4 times.

In the reports hitherto published on euphthalmine I found no data whatever regarding any microscopic changes in the cornea

after the employment of this mydriatic, at least only the external appearance of the same is mentioned.

In order to ascertain this, I have microscopically examined the eyes of rabbits which were exposed to the action of a 5 and 10 per cent. solution of euphthalmine.

The corneal epithelium always remained unchanged, it showed no unevenness, the contour of the eye was well preserved, and the cells remained normal. Therefore, the microscopic appearance of these cases corresponds completely with the microscopic clinical experiments.

In conclusion, I give the following *résumé:*

(1) The dilatation of the pupil appears fairly rapidly.

(2) Duration of action is short when compared with other mydriatics.

(3) The paresis of accommodation is slight.

(4) Intraocular pressure is not increased.

(5) The corneal epithelium remains intact.

(6) There are no symptoms of irritation or toxicity.

All these advantages make eupthalmine hold a very important position in ophthalmology. DEADY.

Hunt, J. Middlemass.—On the Relation of Fibrinous Rhinitis to Dipththeria.—*The Brit. Med. Jour.*, October 22, 1898.

Fibrinous rhinitis may be defined as an acute inflammation of the nasal mucous membrane, which is characterized by the presence of false membrane and the absence of constitutional disturbance, glandular enlargement, albuminuria, or paralysis. Reports of four cases are given, three of which were directly associated with diphtheria. He says that "clinically such cases (fibrinous rhinitis) are not diphtheria, but pathologically and bacteriologically they are so," and concludes with the following summary.

"1. While admitting that other bacteria beside the Loeffer bacillus may give rise to membranous exudation in the nasal passages, the vast majority of cases of fibrinous rhinitis are due to the Loeffler bacillus.

"2. It is impossible on clinical grounds alone to distinguish fibrinous rhinitis from mild nasal diphtheria.

"3. All cases of fibrinous rhinitis should be regarded as diph-

theria until the contrary has been proved by reliable bacteriological investigation." PALMER.

Yonge, Eugene S.—The Treatment of Dysphagia in Laryngeal Tuberculosis.—*The Brit. Med. Jour.*, October 22, 1898.

The article is so well and concisely abstracted by author we give it in full.

The pain in deglutition occurring in laryngeal tuberculosis is a modification of the act arising from the squeezing together of the swollen and ulcerated tissues, especially about the orifice of the larynx, and from the pressure of solid or fluid nourishment on these structures.

If ulceration is absent and discomfort is felt only at meals, a spray of cocaine (5 or 10 per cent.) or a pastille of morphine, and cocaine administered before nourishment is taken, may prove successful.

If ulceration has occurred the dysphagia will of course be more or less exigent according as the loss of substance is relatively extrinsic or intrinsic to the larynx, and more or less exposed to the pressure of food. In mild cases injections of menthol and guaiacol have both a soothing and a specific curative effect on tuberculous ulcers. Donelan advocates the submucous injection of guaiacol into the floor of the ulcer, combined with sprays of that drug, as the quickest means of relieving the dysphagia in both mild and severe cases. Ransome has found a spray of nitrate of silver very soothing after the first irritation has passed off, film being formed which protects the loss of tissue from further injury. Antipyrin is said to last longer than cocaine, when he has observed fairly complete anæsthesia to result, but in the author's experience it acts best mixed with cocaine, lasting in some cases up to five hours. It is well known that food in semisolid condition is swallowed with greater facility when there is dysphagia than either liquids or solids.

In more distressing conditions of suffering, consuming the food in the position recommended by Wolfenden may be of value ; it also tends to prevent coughing on the ingestion of nourishment. A 5 or 10 per cent. solution of cocaine may here again be useful; but sometimes the application itself causes distress, in which case a sticky mixture of hydrochlorate of morphine, mucilage of

tragacanth, glycerine, and water, taken in sips before meals, has, in the author's practice, proved extremely soothing. Iodoform and morphine are very old remedies, but still found in certain cases to be of value.

The comparatively recently introduced local anæsthetics which the author has had the opportunity of testing are holocain, aneson, parachlorphenol, and orthoform. Holocain does not contract the blood vessels nor produce cerebral excitation, the taste is less unpleasant than that of cocaine, and given in moderate doses it has not produced any toxic symptoms ; its anæsthetic qualities are well marked. Aneson the author has found of very little value. Parachlorphenol causes intense pain at the time of application to the ulcer, but the subsequent anæsthesia is prolonged. Orthoform appears, up to the present, to be the most valuable remedy for the dysphagia of laryngeal tuberculosis. It is strongly anæsthetic, is non-toxic, its effects are lasting, and it is appreciably antiseptic.

Arytenoidectomy and epiglottidectomy have been proposed for the relief of dysphagia when the pain and difficulty in swallowing are such as to bring the patient to the brink of starvation ; in such cases the author would prefer to use the esophageal tube or feed by the rectum. PALMER.

Sherman.—Sympathetic Ophthalmitis.—*Cleveland Journal of Medicine*, March, 1899.

In an article on this subject the author presents the rules for its treatment as formulated by Swanzy, as follows :

1. Although danger to the second eye practically does not arise until inflammation has been set up in the exciting eye, yet I would perform primary enucleation, evisceration, or Males' operation on the latter if it has been so injured as to make recovery of sight almost hopeless, and the onset of iridocyclitis in it almost certain.

2. I should enucleate in the same case, were iridocyclitis already set up in the injured eye.

3. I would enucleate in a case of iridocyclitis where a foreign body, which could not be safely extracted, was present in the eye, even though the vision were fairly good ; because we know that here the danger of sympathetic ophthalmitis amounts almost to a certainty.

4. I would enucleate in a case of acute iridocyclitis, traumatic or idiopathic, where vision was lost, especially if the eye were tender on pressure ; for here the eyeball is useless and disfiguring, and apt to be a source of danger to its fellow.

5. I would enucleate in a case of phthisis bulbæ, even of old standing, where there was shrinking pain on pressure, for the same reason as in No. 4.

6. I would enucleate in a case where the sympathizing eye is already affected, provided vision in the exciting eye be lost, and hopes of its recovery but slight, if any ; for improvement in the sympathizing eye or a greater amenability of it to treatment has been frequently observed after enucleation of the exciting eye has been done.

7. I would enucleate in a case of sympathetic irritation if the sight of the exciting eye were very defective and the neurosis very persistent.

1*a*. I would not remove any injured eye (unless it contained a foreign body which I could not extract) if the sight were fairly good and as yet no sign of inflammation were present. For inflammation may not come on, and the eye may possibly be saved.

2*a*. I would not enucleate the exciting eye, if sympathetic ophthalmitis has already appeared, should the vision of the exciting eye be fairly good. For it often occurs that the process in the sympathizing eye is not arrested by the proceeding, and that where the latter is not undertaken the exciting eye turns out in the end to be the organ with better vision. DEADY.

Onodi.—A Rare Anomaly (Posterior Ethmoidal Cell). —*Rev. Hebd. de Lar., O., R.*, December 24, 1898; *Jour Lar., Rhin. and Otol.*

The author adds to the anatomy of the nasal accessory sinuses a case of anomalous posterior ethmoidal cell.

On sagittal section of the face he found a large sinus between the roof of the right orbit posteriorly and the anterior fossa of the skull. At first he supposed this to be part of the posterior diverticulum of the frontal sinus, a condition which has been often described. The anomalous cell proved, however, to belong to the posterior ethmoidal group, and in no way connected with the rather small frontal sinus. It measured 2 cm. in height and 3 by 4 in length and breadth. PALMER.

Ledemann, M. D.—A Simple Method of Preparing a Serviceable Solution of the Supra-renal Gland for Nasal or Laryngeal Application.—*The Larynx*, April, 1899.

Upon experimentation with mixing in the gland solution sundry antiseptics as formalin, carbolic acid, corrosive sublimate, and boracic acid, the author found that each inhibited the full vaso-constrictive action of the gland. He then tried with success the formula of Dr. C. Fisch, of St. Louis. To a dram of a twenty-five per cent. solution of glycerine in water add 10 grs. of Armour's powdered extract of the gland, allow this to stand forty-eight to fifty-two hours, frequently shaking it during this time; then filter this through ordinary filter paper.

The glycerine prevents putrefaction for some time, but does not interfere with its hemostatic action. It is needful to guard against reaction after operations in which it is used. He uses a "spunk" tampon covered with nosophen, or nosophen gauze. These can remain forty-eight hours. PALMER.

Oliver, C. A.—A Case of Reflex Irritation (Urticaria and Eye-Strain).—*Phila. Med. Journ.*, January 14, 1899.

"On August 21, 1892, M. E. I., an apparently healthy widow, aged forty-seven, applied to me for glasses. She made the remark that for distance she saw very well, but for close work she had had difficulty. On estimating her vision, I found that the sight of the right eye equaled $\frac{20}{xi}$, while that of the left was reduced to $\frac{20}{cxxx}$. The opthalmoscope showed an astigmatic condition. I explained to her what was necessary, and a thorough testing of the eyes under a mydriatic gave me the following results: O. D. + S. 2.50 D ⌔ + C. O. 75 D. ax. 70°, V. = $\frac{20}{xxx}$; and O. S. − S. 150 D. ⌔ − C. 1.75 D. ax. 180°, V. = $\frac{20}{xlv}$. Close work required the addition of + S. 1.50 D. lenses. I procured a pair of glasses with the above distance correction combined with segments of + S. 150 D. Upon handing them to the patient, I told her 'to wear them constantly.' In a few weeks' time she returned, and said, 'Doctor, the glasses have cured my hives.' My curiosity being aroused by this most peculiar voluntary assertion, I asked her to tell me about her case, when she gave me the following account: 'For more than thirty-five years I have been constantly troubled with hives. When in my "teens," I remember having taken medicine for one

year's time without intermission before any relief was obtained, this lasting for about three or four months' time. The condition then became as bad as ever.'

"She has had attacks so pronounced that her body has been covered with the urticarial eruption, these exacerbations lasting for weeks at a time. She remembers that when a girl of eighteen or nineteen she did not go out of the house, unless absolutely necessary, for six months, as her physician had said she 'would catch cold and die if she went out while her body was covered with hives.' Personally, she always noticed that it made but little difference if she went out of the house or if she remained indoors, except that when she was exposed to the cold for any undue period of time, the eruption became worse, relief being then best obtained when she immediately placed herself near a hot stove. She was certain that foods never had any effect upon her. Dr. M. L. Herr of Lancaster, who has treated the patient for this affection for ten or twelve years,—she having always resided in the same locality,—has told me that the sight of the woman coming into his office had a similar effect upon him as a red flag would upon a bull. In fact, he did not know what to prescribe or what excuse to offer, having exhausted all of his resources.

"I interviewed Mrs. I. some months after she secured the glasses, and she informed me that since she had worn them constantly, she had been free from the eruption and had not taken any special hygienic precautions, and had not used any medicine. In her efforts to prove the efficiency of the glasses, she had frequently found that upon leaving them off for even half an hour at a time, hives would appear upon her body, while, on the contrary, the eruption would pass away in a little while after the glasses were resumed. Another fact that she noticed was that before wearing the glasses, she always felt cold, but since their use she was as warm and us comfortable as were the other members of her family under similar circumstances."

DEADY.

Lannois and Tarnier.—Auricular Lesions as a Cause of Agoraphobia.—*Annales des Mal. de l'Or.*, October, 1898.

In an article on the subject recording ten (10) cases in which a dread of large open spaces was associated with vertigo,

clearly due to disease of the ear, the following case is presented, and is particularly interesting in the fact that, as the aural disease yielded to treatment, the agoraphobia disappeared :

A man of forty, with atrophic rhinitis of twenty-five years' duration, and cicatrization of both middle ears, due to suppurative otitis in infancy. For eight years frequent attacks of vertigo with nausea and vomiting; tinnitus aurium and marked deafness for three years. For six or eight months the symptom of agoraphobia had been added to the others, so that the patient was unable to cross large open spaces in Paris, and even when crossing a road of more than ordinary width he would be suddenly seized with vertigo, with cold sweats, etc. In crossing a road he found it necessary to wait until a carriage passed at a walking pace, when he would take an oblique course, following the vehicle as far as possible. He was unable to go to the theater on account of the sensation of distress caused by the space before him.

He was put on a rigid milk diet on account of chronic albuminuria, but without any result with regard to the agoraphobia and vertigo. His ears were then treated by catheterization, which rapidly improved the hearing and put a stop to the vertigo. At the end of twelve days' treatment he was able to cross the road without thinking about it, and he attributed his freedom solely to the loss of vertigo. When seen a year later he reported that the agoraphobia returned in a modified degree when the vertigo reappeared some time after the treatment. DEADY.

Hunt, Middlemas.—A Case of Hysterical Aphonia with Ventricular Band Speech.—*Jour. Lar., Rhin., and Otol.*, July, '99.

A Jewess at age of sixteen years was terribly frightened at a "wake" by the falling of the corpse from the coffin, when was unconscious for several hours. "For two or three years she was absolutely mute." Once her normal voice was restored under ether anæsthesia, normal interval lasting only two hours. Speaks in distinct whisper, produced by approximation of ventricular bands while "cartilaginous glottis was wide open and the vocal processes remained apart." Galvanism, hypnotism, vocal drill, etc., was futile. But improved gradually till "talks in a deep, rough, but fairly powerful voice." She suddenly recovered after another

fright from seeing a man fall receiving fatal injuries. The true cords, etc., act normally.

"The points of interest are: (1) The severity of the original shock: (2) the recovery after exposure to excitement, when all remedies had failed; and (3) the development in the course of time of ventricular band speech to replace the lost natural voice."

PALMER.

Discussion on Asthma in Its Relation to Diseases of the Upper Air-Passages.—"*Proceed. of the Lar. Soc. of London*," in the *Jour. Lar., Rhin., and Otol.*, July, '99.

DR. PERCY KIDD: "The following conclusions appear to be justified. In some cases asthma is relieved by the removal of polypi, though the explanation of this effect is still very obscure. Hay asthma may sometimes be benefited by treatment of morbid conditions of the nose and nasopharynx, an experience of which, at present, I can claim no personal knowledge. The prospects of improvement in such circumstances, as in the case of polypi, seem to be very uncertain, but in the presence of definite nasal stenosis local treatment is not only warranted but advisable. In the ordinary form of asthma, uncomplicated by hay fever or polypi, nasal symptoms are not uncommon, but the nose is generally healthy and requires no local treatment, though a spray of cocaine is said to give relief in some cases. Here the nasal symptoms may be regarded as merely a part of a general vasomotor neurosis of the respiratory tract. The history of some instances of hay-asthma, in which spasmodic attacks persist in the winter, although the nasal symptoms are then in abeyance, shows how important is the neurosal element, quite apart from the existence of peripheral irritation of the nares."

DR. J. MCBRIDE (Glasgow): Voltolini, Hack, B. Frankel, and others have called "attention to a connection which is admitted by all thoughtful physicians and specialists of to-day." Makes two divisions: (1) "nasal asthma," and (2) "asthma caused by other parts of the upper respiratory tract."

The commonest form of the first division is hay fever. "The specific irritant touches the mucous membrane, which in order that the other phenomena may result, must be hyperæsthetic," or, as he expresses it elsewhere "hay fever requires for

its development a neurasthenic, or at least a neurotic condition which acts as a predisposing cause."

A less frequent cause is nasal polypi. Strange to say that small polypi are more liable to cause asthma than large: probably it is because they are more mobile. His views are very conservative, but he advises operating on any nasal deviation from the normal in an asthmatic, as it will probably afford relief as we see from the following: "I do not wish to say that I have met with nasal asthma in an absolutely normal nose; but it appears to me that in some asthmatics nasal treatment is permissible, and even desirable, when the conditions are such that on other grounds operative measures would certainly not be indicated."

Speaking of the sensitive areas of mucous membrane, called "cough areas," he says, "My experience has been that, in almost every patient who shows this phenomenon, the application of the electro-cautery to these areas will produce marked amelioration, amounting in some instances to a practical cure."

On account of small personal experience with asthma of second division, little is said.

Although strongly advising operative measures, he also reminds us that "we must not forget to use such general remedies and modifications of regimen as have been found useful by physicians generally."

Dr. Thorowgood said he had seen many cases of this malady markedly ameliorated and some cured by the removal of adenoids.

Mr. Wagget believed that it was very seldom that a causal relationship between true spasmodic asthma and nasal disease could be established on a strictly logical basis.

Dr. Macintyre (Glasgow) believed that while perfect cures were seldom accomplished, material amelioration obtain in the majority of cases from well-directed nasal surgery.

Dr. Herbert Tilley, whose experience had been principally with "inherited asthma" and "gouty asthma," considered intranasal treatment of little avail, although "at the same time, he would not deny that occasional cases might not be immensely relieved by intranasal treatment. The only cases in which he could consider he had *cured* asthma by surgical treatment were those in children where the disease was associated with large

tonsils, post-nasal growths, and accompanying bronchial and nasal catarrh with much secretion."

Dr. Scones Spicer agreed with Dr. McBride's views, and gave as indications for removing a spur, "(1) that it acts as an impediment to the due physiological intake of air, with consequent alteration of normal air tension on the nasal mucosa and in the pneumatic accessory cavities; (2) that it is in abnormal contact with other intranasal structures, either permanently, or periodically on mucosa turgescence, and leads to irritative and reflex disturbances. Hence, a large spur may often be ignored if in a cavity otherwise roomy, whereas a small one in other relations and situations demands attention."

Dr. P. Watson Williams (Bristol) thought "we do not know for certain what is the actual condition of the bronchi in asthma" nor how nasal abnormalities caused asthma, still he believed in treating intranasal defects in asthmatics, since the removal of any contributory factors toward the occurrence of the paroxysms, although they might not be the essential cause, will often materially aid our efforts in other directions to combat the disease, while occasionally the happy results that follow the intranasal treatment seem conclusive proof that therein lay the essential cause."

Dr. Permewan considered "there could be no doubt as to the propriety of nasal treatment in cases of asthma."

Dr. Dundas Grant, while very strongly advocating surgical measures directed to the nasal cavity, recognized "that there should be a judicious combination of the medical and surgical treatments, so as to give the patient a double chance of cure."

Dr. Clifford Beale thought that "unless some definite evidence could be obtained that the source of irritation was in the nose, any operation except for the relief of obstruction was hardly justified."

Dr. Wm. Hill: "In conclusion, he thought he was considerably below the mark in asserting that marked relief might be expected in fifty per cent. of cases of asthma *plus* nasal disease, provided the nasal treatment was carried out with requisite thoroughness."

Sir Felix Semon held that there "was a very clear proof that asthma may be positively produced from the nose": but in regard to the results of nasal treatment for the same, he divided the cases

in the following classes; (a) lasting success obtained, small percentage, (b) temporary benefit obtained, comparatively large percentage; (c) no success at all, large percentage.

Dr. St. Clair Thomson went further, and added to the above classification a fourth class, to wit : those who were considerably damaged by intranasal treatment.

Dr. Lambert Lack thought "the undoubtedly frequent relation of asthma to nasal disease was not a simple reflex."

The President (Dr. F. de H. Hall), "was quite certain that he had seen, in a very fair proportion of cases, considerable and permanent relief." He thought all would agree with Goodhart that "the chronic asthmatic was almost as hard to cope with as the chronic epileptic," and they should not expect to work miracles or they would be disappointed.

In closing the discussion Dr. Kidd "said that if there was obvious disease of the nose, local treatment was advisable."

Palmer.

Hamm (Braunschweig).—Treatment of Ozena with Citric Acid.—*Munch. Med. Wochen.*, No. 15, 1899.

He claims to relieve the odor almost immediately although the crust continues for a time, which latter gradually ceases forming by perseverance in its use. No perfect cures were obtained. Insufflation of equal parts of citric acid and sugar of milk are made three times a day, accompanied by douches. Palmer.

Peters, E. A.—The Use of Suprarenal Extract in Conjunction with Cocaine to Obtain Bloodless and Painless Operation.—*Brit. Med. Jour.*—July 8, 1899.

In addition to the hemostatic properties of suprarenal extract, which may be best obtained by the application of a pad soaked in strong solutions 50 per cent. or less (in terms of weight of dried gland), the extract is extremely useful in operation on the nose, throat, and ear. I have given it a trial for the last six months at the Golden Square Hospital, and can thoroughly recommend it.

As I shall show elsewhere, for small amounts the limit of decided physiological effect is for suprarenal extract (in terms of dried gland) $\frac{1}{4}$ per cent., for cocaine $\frac{1}{8}$ per cent. dilution. Accordingly it is well to use an amount of suprarenal extract twice

as great, or equal to that of cocaine. I find the ordinary solutions of 10 per cent. suprarenal extract and cocaine useful for the nose and pharynx, while combined 20 per cent. solutions are best for the ear and larynx. These solutions are conveniently prepared from the tabloids which Messrs. Burroughs & Wellcome have prepared at my request ; each tabloid contains the soluble material of 5 grains of the dried gland. Solutions containing low percentages may also be used effectively, but the strength mentioned appears to be preferable. The solution used should contain both cocaine and suprarenal extract, and should be packed in on wool for half an hour to obtain the full effect, which, in the case of the nose, is a shrunken and white mucous membrane.

I have scraped both the inferior turbinals of such a nose, and sawn off a small spur, without a single drop of blood escaping. Further, in acute conditions, such as are associated with nasal and aural polypus, the use of the combined solution will allow of painless and bloodless removal. This combination diminishes poisonous effects and shock, and it greatly prolongs anæsthesia.

It must be remarked, as a rule, that bleeding sets in at the end of two hours, but this may be obviated by plugging immediately after the operation with dried cyanide gauze. The combination of cocaine and suprarenal extract may be used with success in inflammatory conditions, and operations on the eye and other regions. It reduces the tension of the eye and produces constriction of the blood vessels. The local application to acute and chronically-inflamed tissues in various parts is successful in many instances. DEADY.

Oppenheimer, M. D., Seymour.—The Connection of the Female Generative Organs and Laryngeal Affections.—*Jour. Lar., Rhin. and Otol.*, May, 1899.

The morbid nerve impulse from the uterus or ovaries may produce changes in the larynx in two ways ; (1) either "by reflex inhibition of the inferior laryngeal (nerve) through the vagus and sympathetic, or (2) by irritation of the vaso-motor apparatus." Those conditions are seldom discernible by laryngoscope, although after extended investigation Dr. Seiler made in conjunction with Professor Kelly (gynecologist), the former was able to recognize from appearance of larynx when uterine disease existed.

At *puberty* the most frequent affection is a spasm of the glottis, also a frequent recurrent or intermittent congestion of the larynx including ary-epiglottic folds and epiglottis, duration but a few moments.

During *adult life*, excluding period of menstruation, menopause, and pregnancy, pain may occur in epiglottic region dependent upon endometritis or uterine displacement. The latter, especially aggravated retroflexion, causes a short, sharp, dry non-paroxysmal cough similar to that from elongated uvula, constant in day, disappearing at night. Also have paralysis of some of the intrinsic muscles of the larynx from uterine disorders. Anæmia of larynx is the principal sign of uterine disease, especially chronic metrorrhagia. Glottic spasm has been caused by uterine fibroid. A sub-acute or chronic laryngitis occasionally results from catarrhal endometritis. The severity of the laryngeal condition however, bears no proportion to the uterine.

At the *menstrual period* shortly after puberty, occasionally have "chorea laryngis" with barking cough and husky voice. Very infrequent is a typical hemorrhagic laryngitis of vicarious nature. Either a temporary paralysis or acute laryngitis may be result of amenorrhœa. Very frequently the singing-voice is noticeably affected at this time; it is important that singers should be cautioned not to strain their voices at this period.

Incident to the *climacteric*, we find usually parathesias and neuralgias. The latter may be quite severe in character, and both usually occur in the more highly educated and better classes. Acute laryngitis or spasm may appear.

During *pregnancy* laryngeal changes are quite rare, still aphonia or irritative cough may obtain. Sometimes the latter will replace morning sickness.

Operations on the uterus and ovaries seldom affect the voice; but when do, lower it slightly. PALMER.

Campbell, D. A., and Smith, M. A. B.—Foreign Bodies in the Lungs.—*Maratine Med. News*, January, 1899.

Two separate articles in which two clinical cases are reported of the seeds of timothy grass remaining in the lungs for five or eight years respectively, causing symptoms simulating phthisis, including hemorrhages, on two occasions, amounting to "almost

a quart of blood" in the latter case. Expectoration of the seeds (strange to say, unchanged from such a lengthy sojourn in the lung) resulted in cure. PALMER.

Bosworth, F. H.; Asch, Morris J.; Roe, John O.; Gleason, E. B.; Watson, Arthur W.; Douglass, Beaman.—Treatment of Nasal Stenosis due to Defective Septa, with or without Thickening of the Convex Side. —*The Lar.*, June, 1899.

This is a collection of six entirely separate papers describing the operative procedure of each surgeon in said condition. These with discussions constituted the proceedings of a long and very interesting meeting of the Lar. and Rhin. Section of N. Y. Acad. of Med. The discussion in same number of *Lar.* Extracting is impossible. Editor would advise everyone interested to procure such journal, as it will be a trump-card monograph for his library. PALMER.

Wilson, Mary R.—Hemorrhage during an Operation for Convergent Strabismus.—*London Lancet*, July 15, 1899.

The following case is interesting because of its extreme rarity:

A girl, aged eleven years, was admitted to the Ophthalmic School at Hanwell on February 9, 1899, suffering from sub-acute inflammation of the conjunctiva due to the diplo-bacilli described by Morax. She also had a convergent strabismus of the left eye measuring nearly 50°. The squinting eye "fixed" fairly well and showed no limitation of outward movement, and the primary and secondary deviations were equal. At this time right vision equaled $\frac{6}{12}$ and No. 4 J. at 12 centimeters, and left vision equaled $\frac{5}{60}$ and No. 10 J. at 27 centimeters. When under atropine the eye tended to become straight, yet, curiously enough, correction spectacles (right eye + 6 D. sph.; left eye + 7 D. sph.) did not influence the size of the strabismus in the least. Corrected vision equaled $\frac{6}{9}$ for each eye. No diplopia could be detected and the fundi were normal. On April 3 it was decided to operate for the strabismus. The child, it was thought, would bear the operation well if the eye were put under the influence of a solution of hydrochlorate of cocaine (2 per cent.). She proved, however, so exceedingly refractory that division of the internal rectus of the squinting eye was accomplished with diffi-

culty. The moment the operation appeared to be completed, a jet of what seemed to be arterial blood issued from the conjunctival wound, and in the course of a few seconds the eyeball became thrust forward and the lids so greatly thickened by the effusion of blood in their tissures that removal of the speculum was a difficult matter. A pad and roller bandage were firmly applied and the child was put to bed immediately. Two and a half hours later the eye was examined, when the lids were found to be much distended, the upper one being purplish and the lower one of a light-greenish color. There had been some pain which, it was said, had disappeared. The temperature was normal. On April 4 the lids were swollen so much that they could not be opened, while the swelling had extended to the side of the face. The lids were greatly discolored, the upper one especially, but there was no pain. The temperature rose to 99° F., the highest point reached during the continuance of the trouble. The eye was kept firmly bandaged. Two days later (April 6) the temperature was again normal and there was no pain. The discoloration and swelling of the lids persisted, but the latter were slightly opened with little difficulty. The cornea was bright and the child counted fingers. The eyeball was still proptosed, but not markedly, while the swelling had not disappeared from the side of the face. The movements of the eye in the orbit were good. The pad and bandage were re-applied. By the 8th the left eye was better in every way, but a new feature presented: ecchymosis had passed through the cellular tissue of the bridge of the nose and extended to the right eye. On the 10th the child was able to open the lids of the left eye a little, and although there was much effusion of blood beneath the ocular conjunctiva, there was neither pain nor uneasiness. On the 13th the child could open the lids of the left eye. Much ecchymosis existed, but the lids could be everted. Ecchymosis was present also on the right side of the nose and the lower lid of the right eye. A fortnight later, on the 26th, a faint discoloration of the skin of the lids, side of the nose, and left cheek still persisted. There was also a bright red ecchymosis in the ocular conjunctiva on the outer side of the globe near the corneal margin, and the discoloration had not disappeared from the lower lid. The magnitude of the strabismus was much the same as before the operation. Correcting glasses were substituted for the bandage. A month after-

ward, on May 29, there was still a trace of hemorrhage outside the cornea in the ocular conjunctiva and the lower lid was somewhat discolored. On June 2 ether was administered and Mr. Stephenson, after dividing the left internal rectus, shortened and advanced the external rectus. Pads and a roller bandage were applied to both eyes and the patient was again put to bed. On June 6, the position of the eye being excellent, the bandage was discarded, the patient was put upon atropine (two grains to the ounce twice a day), and given a double shade with spectacles for constant wear. The sutures were removed on June 13, and the child was discharged from the Ophthalmic School shortly after, with eyes perfectly straight.

DEADY.

Kenny, A. L.—Golovnie's Osteoplastic Operation on the Frontal Sinus.—*The Australian Med. Gaz.*, January 20, 1899. (*Jour. of Lar., Rhin. and Otol.*).

This is a description of a successful operation for chronic frontal sinus suppuration. The peculiarities of the operation were the turning down of a hinged flap, consisting of the anterior wall of the sinus and the overlying periosteum only, and its subsequent replacement, and the use, instead of a trephine or chisel, of an instrument modified from a circular metal-cutter.

Kenny claims for this instrument the following advantages: 1. The bone incision is as narrow as possible, and there is a minimum loss of substance. 2. It is more effective and more manageable, on a curving surface, than is a trephine. 3. The length of the cutting arm can be changed in a moment, and by taking different centers and different lengths of arm, a regular incision of parabolic shape or half curve, with nearly straight sides, can readily be made. 4. It acts more quickly than a trephine.

PALMER.

Rice, G. B.—The Use of Antitoxin in Diphtheria.—*N. Am. Jour. of Hom.*, August, 1899.

The author in treating the subject gives references to many allopathic authorities; he writes: "We must conclude from the foregoing, that we are still in the dark regarding the nature of antitoxin—but that we have sufficient proof of its comparative

harmlessness when used upon a healthy person, to make its use upon the patient suffering from diphtheria, as not attended by more danger than accompanies the administration of any quickly acting remedy . . . The fact remains, however that there is at the present time such an overwhelming mass of positive evidence, that if one can believe the efficacy of any medicines demonstrable, then there is sufficient proof of the curative power of this single remedy over a definite pathological state, greater than can be shown in the history of medical science. It is useless to argue that the cure of bacteriological diphtheria, and not clinical diphtheria, accounts for many of the favorable statistics. It seems almost equally unreasonable to contend that it is only laryngeal diphtheria that can be cured by antitoxin." PALMER.

Dr. Libotte.—The Electric Treatment of Exophthalmic Goitre.—*Rev. Int. d'Elec.* (*Jour. Elec. Ther.*).

The doctor considers his success due to the use of strong currents, as high as 30 ma. For the cathode he employs a piece of sheet brass 160 sq. centimeters in area, and two-tenths of a millimeter in thickness. This is molded to fit the tumor. The brass is padded with forty layers of absorbent gauze, and the whole covered with cloth. The positive electrode, 100 sq. centimeters, he places at the back of the neck. At the first two séances the current does not exceed 10 ma.; and the maximum (30 ma.) is not reached until the fifth séance. Each treatment lasts five minutes; and daily treatments are given at first. (This is almost identical with procedure advised by Dr. Allaird in our April number. ED.). PALMER.

BOOK REVIEWS.

TEXT-BOOK OF OPHTHALMOLOGY. By Dr. ERNEST FUCHS, Professor of Ophthalmology in the University of Vienna. Authorized Translation, Revised from the Seventh Enlarged and Improved German Edition, by A. DUANE, M. D., Assistant Surgeon Ophthalmic and Aural Institute, New York. With Two Hundred and Seventy-Seven Illustrations. Second American Edition. New York: D. Appleton & Company, 1899. Pp. 860.

A new edition of this sterling text-book will be warmly welcomed by the profession. Upon the appearance of the first edition the great merit of the work was at once recognized, and it immediately took rank as one of the best of its kind; a position which will be fully maintained by the present edition, which is larger by seventy-two pages and richer in all departments by the additions and revisions to which it has been subjected in the five German editions, which have appeared since the first American edition was published.

The changes are not confined to any portion of the book but are visible everywhere; special attention is called, however, to the section on functional examination, where, among other improvements, a detailed illustrated description of the shadow test will be found; to the pathology of corneal and conjunctival diseases: to diseases of the fundus, especially those of the retina, a department which, although good as far as it went, was rather briefly treated in the first edition, and which is now elaborated and freely illustrated. The translator has also taken a hand in bringing the present edition up to date by the insertion of a section upon heterophoria, and another upon the use of cycloplegics and the general subject of the correction of refractive errors. These sections are well written, full of information, and, with the exception of the author's manifest leaning toward homatropin (which in our opinion is of doubtful value as a cycloplegic), are distinct additions to the value of the book.

The illustrations have been largely increased in number, there being thirteen new plates in the article on the retina alone; fifteen in that on the cornea, ten in the section on the iris and ciliary body, and eight in the portion devoted to the anatomy and physiology of the uvea. The total number of new plates in the entire work is eighty. The volume is gotten up in the usual good style of the house of Appleton.

A REVIEW OF RECENT LEGAL DECISIONS AFFECTING PHYSICIANS, DENTISTS AND DRUGGISTS AND THE PUBLIC HEALTH. Together with a Brief for the Prosecution of Unlicensed Practitioners of Medicine, Dentistry, or Pharmacy, with a Paper upon Manslaughter, Christian Science and the Law, and other Matter. By W. A. PURRINGTON of the New York Bar, Counsel of the Dental Society of the State of New York, and Lecturer on Medical and Dental Jurisprudence in the New York College of Dentistry, and one of the Collaborators in "A System of Legal Medicine," by Allan McLane Hamilton and others, etc. Published by E. B. Treat & Co., New York, 1899. Price 50 cents.

This little book of only 105 pages is, as the title claims, a brief review of nearly every point in which the legal profession comes in contact with the physician, the dentist, and the druggist. It is valuable to both the busy medical and legal man, to the former it gives a concise idea of his rights or privileges in plain English, shorn of the usual lengthy verbiage of legal literature, which is usually so confusing to the non-lawyer; while to the latter (the lawyer), inasmuch as each subject treated is accompanied by the name of case decided and where found, of all cases occurring in the last few years, it is a sort of index. The index idea, we may say, is supplemented by a list of the titles of books on medical jurisprudence published since 1869, which appears in the prefatory.

The paper on Manslaughter, Christian Science and Malpractice and the Law is worth the price of the book.

A COMPEND OF THE DISEASES OF THE EYE, AND REFRACTION, Including Treatment and Surgery. By GEO. M. GOULD, A. M., M. D., and WALTER L. PYLE, A. M., M. D. Second Edition, Revised and Enlarged. One hundred and Nine Illustrations, Several of which are in colors. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street, 1899.

This is a compact little book of 295 pages, being No. 8 of the series of quiz compends published by this house. It takes

up all diseases and functional derangements of the eye and adnexa, including physical and physiological optics, the technique of the various methods of examination, ophthalmoscopy, retinoscopy, etc. All necessary information is given in as few words as possible; the appearances, symptoms, course, diagnosis, and treatment of each anomalous condition are concisely presented and brought up to date. There is a rather full description of the various forms of refractive error for the size of the book, a chapter on the fitting of glasses, on the cycloplegics most in use, and on the Stevens arrangement of functional anomalies of the muscles. The important operations and the instruments necessary in their performance are also given. Some of the plates included in the section on the retina and optic nerve are colored, and they are well executed. A table of abbreviations, a glossary of terms, and a good index will also be found. The book is an excellent one and well calculated to give the student a large amount of information in a very short time, if carefully read.

RESPIRATORY EXERCISES IN THE TREATMENT OF DISEASE, Notably of the Heart, Lungs, Nervous and Digestive Systems. By HARRY CAMPBELL, B. S., M. D., Lond.; Fellow of the Royal College of Physicians, London; Physician to the North-West London Hospital, and to the Hospital for the Diseases of the Nervous System, Welbeck Street. London: Bailliere, Tindall & Cox, King William Street, Strand, 1898.

A place on the treatment of disease long vacant seems now filled by this little work of about two hundred pages. To my knowledge there is no book on this subject, and even in the regular text-books very little, if any, attention is given to this form of adjuvant treatment of the disease for which it is beneficial. The writer has noticed the non-interest, and even almost entire ignorance, among many physicians of beneficial respiratory exercises in pulmonary phthisis, the use of which seems so self-evident. We therefore wish it a wide circulation.

The first two-thirds is devoted to a very thorough consideration of the physiological principles upon which it is based, while the remainder treats of the practical manner in which the sundry respiratory exercises relieve certain pathological conditions. The way to use certain portions of one or both lungs is taught, and how it affects different organs.

The different methods of breathing employed by singers,

the effects of immersing the body in compressed air, and the effects of rarefied air, are among other interesting subjects spoken of.

Pulmonary, cardiac, nervous, digestive disorders, and gall stone, obesity, anæmia, epistaxis, stammering, hiccough, and sleeplessness are considered.

PULMONARY TUBERCULOSIS: Its Modern Prophylaxis, and the Treatment in Special Institutions and at Home. Alvarenga, Prize Essay of the College of Physicians of Philadelphia, for the year 1898. Revised and Enlarged. By S. A. KNOPF, Paris, and Bellevue (N. Y.,), Physician to the Lung Department of the New York Throat and Nose Hospital; former Assistant Physician to Prof. Dettweiler, Falkenstein Sanatorium, Germany; Vice President of the Pennsylvania Society for the Prevention of Tuberculosis; Fellow of the American Academy and of the New York Academy of Medicine; Laureate of the Academy of Medicine, Paris, etc. With descriptions and illustrations of the most important sanitaria of Europe, United States, and Canada. Philadelphia: P. Blakistou's Son & Co., 1012 Walnut St., 1899.

A decidedly up-to-date and complete treatment on the subject of pulmonary tuberculosis. The descriptive chapters relating to institutions devoted to the care and treatment of phthisics is most interesting, and proves the author to be thoroughly conversant with the subject in hand.

Dr. Knopf's advocacy of the pavilion plan as a type for an ideal sanitarium for consumptives, though opposed by many of our highest authorities, possesses considerable merit. There can exist no doubt of the fact that a large number of patients can be more economically cared for in this manner. The present popular cottage plan of sanitarium, with accommodations for 150 or less patients, is not too cumbersome, and certainly possesses many advantages over its rival.

In dealing with the question of infection the author has met every contingency. At the same time many of the iron rules specified are somewhat impracticable, for the larger sanitaria at least. The chapter on Public Prophylaxis should be learned by every layman. Were it possible to compel the public at large to read and digest these few all-important truths relating to personal hygiene, man's mortality from tuberculosis might be reduced one-half.

The author also dwells at length on a consideration of dietetics

and hygiene as constituting perhaps the most important part of the treatment of tuberculous patients. These facts have been drafted from the experience of men who have made the subject a life-long study, and in themselves well equip a physician for the intelligent treatment of the consumptive.

Dr. Knopf's advice in regard to a special training for physicians and nurses in charge of tubercular cases should be well received. It is at the sanitaria devoted to this class of cases that we have been able to make the greatest progress against the ravages of this dreaded disease.

It is estimated that it is at present possible to supply sanitarium accommodations for but one out of every 1000 consumptives. Therefore, the brunt of the campaign must be borne by the family physician, who, in view of this fact, should equip himself to be competent to discover and eradicate the disease in its earliest incipiency, and at this time it is claimed that 75 per cent of all cases of phthisis are curable.

The chapters devoted to symptomatic treatment will be found invaluable to the general practitioner. Here in but few words, yet to the point, can be found devices, both medicinal and mechanical, which have proved of the greatest aid in the alleviation of the many possible symptoms accompanying the disease.

A list containing the name and location of many known sanitariums for consumptives in the world is appended to this work, together with all the information of importance connected with these institutions.

Dr. Knopf has enjoyed the advantages of extensive travel and research, which, coupled with a large experience in the care and treatment of tubercular patients, eminently fitted him for the task imposed.

Perhaps not the least interesting portion of this book is its illustrations, some of which depict sanitarium scenes which in a measure characterize the methods practiced at these institutions.

Voice Building and Tone Production, Showing a New Method of Relieving Injured Vocal Cords by Tone Exercises. By H. Holbrook Curtis, Ph. B., M. D., Fellow of the New York Acad. Med., Membre Correspondant de la Société Française d'Otol. de Laryng. et de Rhinol. etc., etc. Second Edition. New York: D. Appleton & Co., 1898.

This book is *sui generis*. It is a book treating this dual subject

from the dual standpoint of the physician and musician, for the physician and musician, written by a physician and musician. The author has been assisted in its production by such a noted musician as Madame Melba. His reputation in this department of laryngology and rhinology is sufficient to recommend it. The subject is treated of in a thorough, original, and practical manner, giving many simple musical exercises for testing, and assisting in placing the voice, which are quite necessary to the laryngologist, and exceedingly instructive, and almost indispensable if he has not had the fortune of having already had a musical education.

Proper respiration for the singer is fully dealt with, occupying twenty pages ; this is followed by a consideration of the "vocal resonators," "registers of the human voice," etc., etc., and concludes with a chapter on "voice figures." The author has found that each tone and semi-tone has its particular figure ; *i. e.*, when the musical note is conveyed against a square metallic plate in the upper surface of which is scattered a small amount of light fine sand. It is well printed and indexed ; but it is a book that needs to be read from A to Z, and should be in the hands of every laryngologist on account of the delicate and important office we perform in handling the vocal apparatus of speakers and singers, which falls to our lot so frequently.

ESSENTIALS OF HOMEOPATHIC MATERIA MEDICA AND HOMEOPATHIC PHARMACY, being a Quiz Compend upon the Principles of Homeopathy, Homeopathic Pharmacy and Homeopathic Materia Medica. Arranged and Compiled especially for the Students of Medicine. By W. A. DEWEY, M. D., Professor of Materia Medica, University of Michigan Homeopathic Medical College ; Author of "Essentials of Homeopathic Therapeutics," Associate Author of "The Twelve Tissue Remedies of Schüssler," etc., etc. Third Edition, Revised and Enlarged. Price : Cloth, $1.75; Morocco, $2.00 ; by mail 10 cents extra. Published by Boericke & Tafel, Philadelphia, 1899.

This is indeed the essentials of materia medica in the fact of only giving the principal or characteristic symptoms of each drug considered, along with its pharmacology. It is written in the form of a quiz compend and designed for the student rather than the practitioner; still I believe that the average practitioner, as the reviewer, will not only find it very instructive but exceedingly interesting. The style and compilation are such

that you cannot pick it up for a few minutes' casual perusal without running across something refreshing to your former knowledge of materia medica. This is because, unlike most of these compends, it includes many of the less used and easily forgotten minor drugs, as well as all the good old stand-bys—the polychrests. It contains 328 drugs.

Further, it is so indexed that not only the whereabout of a certain drug may be found, but the index includes the sundry diseases under which are given the remedies principally useful in combating such malady, *e. g.*, "epilepsy: sil., bufo., cicuta., œnanthi, ac. hydrocy."

The book is of convenient size, and light, and, as I inferred above, beneficial for the student to study and the busy practitioner to keep ready to peruse at odd moments.

DISEASES OF THE EAR, NOSE AND THROAT, AND THEIR ACCESSORY CAVITIES. BY SETH SCOTT BISHOP, M. D., D. C. L., L. L. D., Professor of Diseases of the Nose, Throat and Ear in the Illinois Medical College; Professor in the Chicago Post-graduate Medical School and Hospital; Consulting Surgeon to the Mary Thompson; One of the editors of *The Laryngoscope*, etc. Second Edition. Thoroughly Revised and Enlarged. Illustrated with ninety-four colored lithographs and two hundred and sixteen additional illustrations. Philadelphia, New York, Chicago: The F. A. Davis Company, publishers, 1898.

The first edition of this work we considered a model text-book upon the subject treated; the second will excel it somewhat in very many points. It is written for the student and the busy practitioner, with several portions interesting to the specialist in a concise form. On account of few, if any, text-books containing the latest ideas on the following subjects, it has treated them very fully indeed, to wit.: The improved compressed air instruments, vaporizing apparatus; medical and surgical management of mastoid disease; relation of the diseases of the eye and nose; the blood-serum therapy of diphtheria.

Among many passages which interested the reviewer, would mention the symposium of opinions of twenty-nine physicians (most of whom are recognized authorities the world over) upon the cause of hay fever, and the prognosis of such malady; the chapter on "The Relation of the Diseases of the Eye and Nose;" "Life Insurance as Affected by the Diseases of the Ear, Nose and

Throat;" and the clear manner in which the author gives his reasons for his belief in the duality of croup and laryngeal diphtheria, than which I do not know of a more mooted point in our specialty.

While the work of the author is beyond criticism, that of the printer and binder falls not a whit behind that of the former.

A TEXT-BOOK OF DISEASES OF THE NOSE AND THROAT. BY D. BRADEN KYLE, M. D. Clinical Professor of Laryngology and Rhinology Jefferson Medical College; Consulting Laryngologist, Rhinologist and Otologist, St. Agnes' Hospital; Bacteriologist to the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases; Fellow of the American Laryngological Association, etc., etc. With 175 illustrations, twenty-three of them in colors. Philadelphia: W. B. Saunders, 1899. Price: Cloth, $4.00; Sh'p. and ½m, $5.

One can read little of this work before he is impressed with the easy style of the author; still, every word counts—it is concise withal.

The most striking feature is that the subject—Nasal and Laryngeal Diseases—is considered or viewed from a pathological standpoint, and that the nose and throat are not an entity entirely separate from the rest of the physical economy. The relation or inter-dependency of this and other portions of system is forcibly brought out. This is especially shown in the chapters on "Nasal Neuroses," "Related Pathological Conditions of the Nose and Eyes," and the paragraphs upon the causation of hay fever by uric acid diathesis. Neuroses are divided into those of olfaction and reflex. The Reflex, into those of the Respiratory Tract, and those outside of such Tract. The last division comprises the reflexes of the Ear, Eye; Migraine, Congestive Headache, Neuralgia; Chorea, Epilepsy, Vertigo, and Aprosexia; Stomach; Heart, and Sexual Organs.

The macroscopical and microscopical pathology of the sundry diseased conditions is more thoroughly treated than in any other text-book on this subject in the English language that I know of.

The completeness of the work may be judged by the divisions of the chapter on Diseases of the Uvula and Soft Palate (usually treated of superficially). (1) Malformations, of which there are three sub-divisions; (2) Inflammatory Diseases, three sub-divisions; (3) Non-inflammatory Diseases, six sub-divisions. Three forms of paralysis are mentioned.

Another point worthy of notice is the manner in which the Diagnosis of the different diseases is considered. For instance, under Membranous Laryngitis, the paragraph on diagnosis includes; (1) acute laryngitis, (2) œdema, (3) diphtheria, (4) retropharyngeal or retrolaryngeal abscess, (5) tonsilitis, (6) capillary bronchitis, (7) whooping cough, or (8) foreign bodies in the throat and larynx. Then the points in which each differs from croup are enumerated.

Finally would mention that the colored illustrations are above the average and that we notice the instruments recommended are the latest and most improved.

While the author has written principally for the student and general practitioner, we can vouch that it will be interesting and instructive to many of our specialists.

HAY FEVER AND ITS SUCCESSFUL TREATMENT. By W. C. HOLLOPETER, A. M., M. D. Clinical Professor of Pediatrics in the Medico-Chirurgical College of Phila.; Physician to the Methodist Episcopal Hospital; Pediatrist to the Medico-Chirurgical Hospital, to St. Joseph's Hospital; Fellow of the American Academy of Medicine, etc.

Second Edition, Revised and Enlarged. Philadelphia: P. Blakiston's Sons & Co., 1899. Price $1.00.

The second edition of this book being needed in so short a time, just one year, shows for itself the demand for literature upon this unsatisfactorily treated disease and the successful sale of this little book.

All except the treatment and bibliography are the same as the first edition—these we favorably commented upon when reviewing the first edition last October. Bibliography is brought up fully to date. The chapter on treatment is an immense improvement upon the former edition. It is entirely rewritten. While the author still strongly favors and almost wholly relies upon the daily thorough "scrubbing" out the nares with a solution similar to Dobell's Solution and spraying with some soothing drug mixed with aiboline; yet he has given several other recipes for cases in which this may not be successful: a dietary; treatment founded on the uric acid theory of the ætiology of this disease, general prophylactic, hygienic treatment, etc.—making in all quite a good résumé of the subject.

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